

# Index of Papers Published in 1970 Journals

## Author Index

### A

- Aagaard, P. M. and Dean, R. G.: *Wave Forces: Data Analysis and Engineering Calculation Method*, JPT Mar., 368
- Aagaard, P. M. and Thrasher, L. W.: *Measured Wave Force Data On Offshore Platforms*, JPT Mar., 339
- Abel, W., et al: *Simulation of a Partial Pressure Maintenance Gas Cycling Project with a Compositional Model, Carson Creek Field, Alberta*, (Tech. Paper) JPT Jan., 38
- Adams, R. B., et al: *Application of Probability to the Design of Single-Point Moorings*, SPEJ Sept., 219
- Agarwal, R. G., et al: *An Investigation of Wellbore Storage and Skin Effect in Unsteady Liquid Flow: I. Analytical Treatment*, SPEJ Sept., 279
- Albrecht, R. A. and Marsden, S. S.: *Foams as Blocking Agents in Porous Media*, (Tech. Paper) SPEJ Mar., 51
- Al-Hussainy, R., et al: *An Investigation of Wellbore Storage and Skin Effect in Unsteady Liquid Flows: I. Analytical Treatment*, SPEJ Sept., 279
- Alliquander, O.: *Aspects of Deep Drilling in The Carpathian Basin*, (Tech. Paper) JPT Feb., 125
- Andre, H. and Bennion, D. W.: *A Transform Approach to the Simulation of Transient Gas Flow in Porous Media*, SPEJ June, 135
- Ayers, R. C., Jr., and Chamberlain, N. F.: *NMR Technique for Analysis of Samples from Alcohol Flooding Tests*, (Forum) SPEJ Mar., 7

### B

- Baiton, N., et al: *Ante Creek — A Miscible Flood Using Separator Gas and Water Injection*, (Tech. Paper) JPT Oct., 1232
- Beach, H. J., et al: *Causes and Prevention of Failures in Cement Pipe Linings*, (Tech. Paper) JPT Jan., 51
- Bearden, W. G., et al: *Interpretation of Injectivity Profiles in Irregular Boreholes*, (Tech. Paper) JPT Sept., 1089
- Beazley, R. A., et al: *Application of Probability to the Design of Single-Point Moorings*, SPEJ Sept., 219
- Beck, R. W. and Cole, M. W., Jr.: *Small-Anchor Tests to Predict Full-Scale Holding Power*, (Tech. Paper) SPEJ June, 127
- Beckers, H. L. and Harmsen, G. J.: *The Effect of Water Injection on Sustained Combustion in a Porous Medium*, SPEJ June, 145
- Bennion, D. W. and Andre, H.: *A Transform Approach to the Simulation of Transient Gas Flow in Porous Media*, SPEJ June, 135
- Bernard, G. G. and Holm, L. W.: *Model Study of Foam as a Sealant for Leaks in Gas Storage Reservoirs*, (Tech. Paper) SPEJ Mar., 9
- Blanton, J. R., et al: *Performance of a Propane Slug Pilot in a Watered-Out Sand — South Ward Field*, (Tech. Paper) JPT Oct., 1209
- Bohannon, J. M.: *A Linear Programming Model for Optimum Development of Multi-Reservoir Pipeline Systems*, JPT Nov., 1429
- Bond, D. C. and Cartwright, K.: *Pressure Observations and Water Densities in Aquifers and Their Relation to Problems in Gas Storage*, (Tech. Paper) JPT Dec., 1492
- Brigham, W. E.: *Planning and Analysis of Pulse-Tests*, JPT May, 618
- Brinegar, D. W. and Crews, S. T.: *Using Large Drill Collars Successfully*, (Tech. Paper) Aug., 999
- Broussard, L. P., et al: *Measurement of Casing Buckling in Producing Intervals*, (Tech. Paper) JPT Mar., 255
- Burke, B. G.: *The Analysis of Motions of Semisubmersible Drilling Vessels in Waves*, SPEJ Sept., 311
- Bursell, C. G.: *Steam Displacement — Kern River Field*, (Tech. Paper) JPT Oct., 1225
- Burwell, E. L., et al: *Shale Oil Recovery by In-Situ Retorting — A Pilot Study*, (Tech. Paper) JPT Dec., 1520

- Bush, D. C. and Jenkins, R. E.: *Proper Hydration of Clays for Rock Property Determinations*, (Tech. Paper) JPT July, 800
- Byrd, J. F.: *A Performance Study of the South Pampa Waterflood*, (Tech. Paper) JPT Apr., 393

### C

- Calhoun, T. G., II, and Hurford, G. T.: *Case History of Radioactive Tracers and Techniques in Fairway Field*, (Tech. Paper) JPT Oct., 1217
- Carpenter, H. C., et al: *Shale Oil Recovery by In-Situ Retorting — A Pilot Study*, (Tech. Paper) JPT Dec., 1520
- Cartwright, K. and Bond, D. C.: *Pressure Observations and Water Densities in Aquifers and Their Relation to Problems in Gas Storage*, (Tech. Paper) JPT Dec., 1492
- Casad, B. M. and Patton, C. C.: *Paraffin Deposition from Refined Wax-Solvent Systems*, (Tech. Paper) SPEJ Mar., 17
- Cerullo, R. E. and Schrider, L. A.: *A Decline Curve Pitfall Using Least-Squares Solution*, (Forum) JPT Apr., 441
- Chamberlain, N. F. and Ayers, R. C., Jr.: *NMR Technique for Analysis of Samples from Alcohol Flooding Tests*, (Forum) SPEJ Mar., 7
- Chapin, R. L. and Woodhall, R. J.: *Analysis of an Operating Telemetry System at Elk Basin Field*, (Tech. Paper) JPT Apr., 397
- Charleston, J.: *Scale Removal in the Virden, Manitoba, Area*, (Tech. Paper) JPT June, 701
- Chase, R., et al: *Case Histories of Production Logging*, (Tech. Paper) JPT Feb., 207
- Chenevert, M. E.: *Shale Alteration by Water Adsorption*, (Tech. Paper) JPT Sept., 1141
- Shale Control with Balanced-Activity Oil Continuous Muds, JPT Oct., 1309
- Chierici, G. L. and Ciucci, G. M.: *On the Subject of Reserve Estimates in Water-Drive Gas Reservoirs*, (Forum) JPT May, 561
- Chilingar, G. V., et al: *Effect of Direct Electrical Current on Permeability of Sandstone Cores*, (Tech. Paper) JPT July, 830
- Ciucci, G. M. and Chierici, G. L.: *On the Subject of Reserve Estimates in Water-Drive Gas Reservoirs*, (Forum) JPT May, 561
- Clavier, C., et al: *Log Analysis of Sand-Shale Sequences — A Systematic Approach*, JPT July, 867
- Closmann, P. J., et al: *A Steam-Soak Model for Depletion-Type Reservoirs*, JPT June, 757
- Coats, K. H. and MacDonald, R. C.: *Methods for Numerical Simulation of Water and Gas Coning*, SPEJ Dec., 425
- Coats, K. H. and Spivak, A.: *Numerical Simulation of Coning Using Implicit Production Terms*, SPEJ Sept., 257
- Coats, K. H., et al: *A New Technique for Determining Reservoir Description from Field Performance Data*, SPEJ Mar., 66
- Cocanower, R. D., et al: *Interpretation of Injectivity Profiles in Irregular Boreholes*, (Tech. Paper) JPT Sept., 1089
- Cole, M. W., Jr., and Beck, R. W.: *Small-Anchor Tests To Predict Full-Scale Holding Power*, (Tech. Paper) SPEJ June, 127
- Cone, C.: *The Case History of the University Block 9 (Wolfcamp) Field — A Gas-Water Injection Secondary Recovery Project*, (Tech. Paper) JPT Dec., 1485
- Craig, F. F., Jr.: *A Current Appraisal of Field Miscible Slug Projects*, (Tech. Paper) JPT May, 529
- Effect of Reservoir Description on Performance Predictions, (Tech. Paper) JPT Oct., 1239
- Crawford, D. B. and Harlan, J. D.: *Design and Operating Characteristics of the Sunflower Helium Plant*, (Tech. Paper) JPT Sept., 1098

- Crawford, P. B.: *Texas Offshore Bidding Patterns*, (Tech. Paper) JPT Mar., 283
- Crews, S. T. and Brinegar, D. W.: *Using Large Drill Collars Successfully*, (Tech. Paper) JPT Aug., 999
- Currens, D., et al.: *Interpretation of Injectivity Profiles in Irregular Boreholes*, (Tech. Paper) JPT Sept., 1089
- Curtis, L. B. and Shepler, J. C.: *Dubai Khazzan—Pioneer of Large Undersea Storage Systems*, (Tech. Paper) JPT Sept., 1065

## D

- Dean, R. G. and Aagaard, P. M.: *Wave Forces: Data Analysis and Engineering Calculation Method*, JPT Mar., 368
- Dempsey, J. R., et al.: *A New Technique for Determining Reservoir Description From Field Performance Data*, SPEJ Mar., 66
- Dickey, P. A.: *Dickey and Fowler Comment on Chocolate Bayou Field*, (Forum) JPT May, 566
- Dieball, D. E. and Skelly, W. G.: *Behavior of Chromate in Drilling Fluids Containing Chrome Lignosulfonate*, SPEJ June, 140
- Dietz, D. N.: *Wet Underground Combustion, State of the Art*, JPT May, 605
- Dillingham, M.: *Interpretation of Injectivity Profiles in Irregular Boreholes*, (Tech. Paper) JPT Sept., 1089
- Doyle, R. E. and Sayegh, E. F.: *Real Gas Transient Analysis of Three-Rate Flow Tests*, (Tech. Paper) JPT Nov., 1347
- Dumanoir, J., et al.: *Log Analysis of Sand-Shale Sequences—A Systematic Approach*, JPT July, 867
- Dumore, J. M.: *Development of Gas Saturation During Solution-Gas Drive in an Oil Layer Below a Gas Cap*, SPEJ Sept., 211
- Dutton, G.: *The Effects of the 1969 Tax Reform Act on Petroleum Property Values*, (Tech. Paper) JPT Dec., 1475
- Duyvis, E. M. and Smits, L. J. M.: *A Test for the Wettability of Carbonate Rocks*, (Forum) SPEJ Mar., 3
- Dysart, G. R. and Whitsitt, N. F.: *The Effect of Temperature on Stimulation Design*, JPT Apr., 493

## E

- Earlougher, R. C., Jr., et al.: *Performance of the Fry In-Situ Combustion Project*, (Tech. Paper) JPT May, 551
- Edelberg, V.: *Discussion on Failures in the Bottom Joints of Surface and Intermediate Casing Strings*, JPT Jan., 105
- Ehring, T. W., et al.: *A Computerized File for Directional Well Courses*, (Tech. Paper) JPT Mar., 267
- Eilerts, C. K.: *Method for Controlling Instability of Liquid Saturation Computations*, (Forum) SPEJ Mar., 5
- El-Nassir, A., et al.: *Effect of Direct Electrical Current on Permeability of Sandstone Cores*, (Tech. Paper) JPT July, 830
- Ely, N.: *Legal Problems in Undersea Mineral Development*, (Tech. Paper) JPT Mar., 237
- Emery, L. W., et al.: *Caustic Slug Injection in the Singleton Field*, (Tech. Paper) JPT Dec., 1569
- EnDean, H. J., et al.: *Causes and Prevention of Failures in Cement Pipe Linings*, (Tech. Paper) JPT Jan., 51
- Erbar, J. and Jones, D. M.: *Computer Determination of Data-Matched Equilibrium Ratios*, (Tech. Paper) JPT Aug., 1007
- Evans, D. J.: *Analysis of Wave Force Data*, JPT Mar., 347

## F

- Farley, J. T., et al.: *Design Criteria for Matrix Stimulation With Hydrochloric-Hydrofluoric Acid*, (Tech. Paper) JPT Apr., 433
- Farouq Ali, S. M. and Myal, F. R.: *Recovery of Penn-Grade Crude Oils by Steam*, (Tech. Paper) JPT June, 705
- Fatt, I. and Kumar, J.: *Specific Surface of Porous Materials*, (Forum) SPEJ Mar., 4
- Field, M. B., et al.: *Kaybob South—Reservoir Simulation of a Gas Cycling Project with Bottom Water Drive*, JPT Apr., 481
- Fons, L.: *Some Pulsed Neutron Logging Contributions to Improved Formation Evaluation*, (Tech. Paper) JPT Apr., 424

- Fowler, W. A., Jr.: *Pressures, Hydrocarbon Accumulation, and Salinities—Chocolate Bayou Field, Brazoria County, Texas*, (Tech. Paper) JPT Apr., 411
- Frawley, F. E., Jr., et al.: *Causes and Prevention of Failures in Cement Pipe Linings*, (Tech. Paper) JPT Jan., 51
- Frentrop, A. H., et al.: *The Thermal Neutron Decay Time Log*, (Tech. Paper) SPEJ Dec., 365

## G

- Gaines, T. H.: *Oil Pollution Control Efforts—Santa Barbara, California*, (Tech. Paper) JPT Dec., 1511
- Galloway, J. R., et al.: *Performance of the Fry In-Situ Combustion Project*, (Tech. Paper) JPT May, 551
- Gatewood, J. R., et al.: *Predicting Results of Sandstone Acidizing*, (Tech. Paper) JPT June, 693
- Gaymard, R., et al.: *Log Analysis of Sand-Shale Sequences—A Systematic Approach*, JPT July, 867
- Givens, J. W., et al.: *Kaybob South—Reservoir Simulation of a Gas Cycling Project with Bottom Water Drive*, JPT Apr., 481
- Gogarty, W. B., et al.: *Injection Well Stimulation with Micellar Solutions*, (Tech. Paper) JPT Dec., 1577
- Gould, R. C.: *Removal of Hydrogen Sulfide from Waterflood Injection Water*, (Tech. Paper) JPT Aug., 913
- Gordon, D. T. and Morgan, J. T.: *Influence of Pore Geometry on Water-Oil Relative Permeability*, (Tech. Paper) JPT Oct., 1199
- Gould, R. C.: *Removal of Hydrogen Sulfide from Waterflood Injection Water*, (Tech. Paper) JPT Aug., 913
- Griffith, J. D., et al.: *Ante Creek—A Miscible Flood Using Separator Gas and Water Injection*, (Tech. Paper) JPT Oct., 1232
- Grinnell, B. M.: *Natural Gas at Any Price*, (Forum) JPT Aug., 937

## H

- Hall, B. E., et al.: *Predicting Results of Sandstone Acidizing*, (Tech. Paper) JPT June, 693
- Hall, C. D., Jr., and Harrisberger, W. H.: *Stability of Sand Arches: A Key to Sand Control*, (Tech. Paper) JPT July, 821
- Hamby, T. W. and Richardson, E. A.: *Consolidation of Silty Sands with an Epoxy Resin Overflush Process*, (Tech. Paper) JPT Sept., 1103
- Hankinson, R. W., et al.: *Determination of Acoustic Velocities for Natural Gas*, JPT July, 889
- Hansford, J. E. and Lubinski, A.: *Analysis of Some Factors Related to Permissible Horizontal Motions of a Floating Drilling Vessel*, SPEJ Sept., 229
- Hardy, H. R., Jr., and Kim, Y. S.: *A Clamp-On Strain Transducer for Use on Geologic Materials*, (Tech. Paper) SPEJ Mar., 41
- Haring, R. E., et al.: *Application of Probability to the Design of Single-Point Moorings*, SPEJ Sept., 219
- Harlan, J. D. and Crawford, D. B.: *Design and Operating Characteristics of the Sunflower Helium Plant*, (Tech. Paper) JPT Sept., 1098
- Harmsen, G. J. and Beckers, H. L.: *The Effect of Water Injection on Sustained Combustion in a Porous Medium*, SPEJ June, 145
- Harris, L. M., and Ilfrey, W. T.: *Drilling in 1,300 Feet of Water—Santa Barbara Channel, California*, (Tech. Paper) JPT Jan., 27
- Harrisberger, W. H. and Hall, C. D., Jr.: *Stability of Sand Arches: A Key to Sand Control*, (Tech. Paper) JPT July, 821
- Harrison, O. R.: *Planning and Implementing a Computer Production Control System*, (Tech. Paper) JPT Feb., 134
- Harvey, A. H. and Menzie, D. E.: *Polymer Solution Flow in Porous Media*, (Tech. Paper) SPEJ June, 111
- Henderson, J. H., et al.: *A New Technique for Determining Reservoir Description from Field Performance Data*, SPEJ Mar., 66
- Herbeck, E. F., et al.: *Performance of a Propane Slug Pilot in a Watered-Out Sand—South Ward Field*, (Tech. Paper) JPT Oct., 1209
- Herring, J. C. and Payne, R. D.: *Texas Water—The Question of Quality*, (Forum) JPT Dec., 1525

- Higgins, R. V.: *Predicting Performance of Waterfloods at Highest Constant Injection Rate*, (Forum) JPT Oct., 1246
- Hille, J. B. and Howell, W. D.: *Explosive Detonation Tested in Hydraulically Fractured Gas Wells*, (Tech. Paper) JPT Apr., 403
- Hirasaki, G. J. and O'Dell, P. M.: *Representation of Reservoir Geometry for Numerical Simulation*, SPEJ Dec., 393
- Holbert, D. R., et al: *A Computerized File for Directional Well Courses*, (Tech. Paper) JPT Mar., 267
- Production Logging as Used To Solve Water Injection Problems in the Huntington Beach Offshore Field*, (Tech. Paper) JPT Sept., 1083
- Holden, W. R. and Overpeck, A. C.: *Well Imaging and Fault Detection in Anisotropic Reservoirs*, JPT Oct., 1317
- Holladay, C. H., Jr.: *Automatic Subsurface Liquid Removal from Gas Wells*, (Forum) JPT Aug., 940
- Holm, L. W.: *Foam Injection Test in the Siggins Field, Illinois*, (Tech. Paper) JPT Dec., 1499
- Holm, L. W. and Bernard, G. G.: *Model Study of Foam as a Sealant for Leaks in Gas Storage Reservoirs*, (Tech. Paper) SPEJ Mar., 9
- Holmes, C. S. and Swift, S. C.: *Calculation of Circulating Mud Temperatures*, (Tech. Paper) JPT June, 670
- Hoover, D. B. and van Poolen, H. K.: *Waste Disposal and Earthquakes at the Rocky Mountain Arsenal, Derby, Colorado*, (Tech. Paper) JPT Aug., 983
- Horn, C. R.: *Professional Registration and the Petroleum Engineer*, (Tech. Paper) JPT Aug., 921
- Hossain, A. K. M. S., et al: *The Effect of Temperature on Irreducible Water Saturation and Relative Permeability of Unconsolidated Sands*, SPEJ June, 171
- Hough, E. W. and Warren, H. G.: *Interfacial Tension of the Methane-Normal Heptane System*, (Forum) SPEJ Dec., 327
- Howald, C. D., et al: *Production Logging as Used To Solve Water Injection Problems in the Huntington Beach Offshore Field*, (Tech. Paper) JPT Sept., 1083
- Howell, W. D. and Hille, J. B.: *Explosive Detonation Tested in Hydraulically Fractured Gas Wells*, (Tech. Paper) JPT Apr., 403
- Huppler, J. D.: *Numerical Investigation of the Effects of Core Heterogeneities on Waterflood Relative Permeabilities*, SPEJ Dec., 381
- Hurfurd, G. T. and Calhoun, T. G., II: *Case History of Radioactive Tracers and Techniques in Fairway Field*, (Tech. Paper) JPT Oct., 1217
- Hurst, W.: *Hurst and Kazemi Discuss Reservoir Limit Testing*, (Forum) JPT Aug., 943

## I

- Ilfrey, W. T. and Harris, L. M.: *Drilling in 1,300 Feet of Water—Santa Barbara Channel, California*, (Tech. Paper) JPT Jan., 27
- Isaacs, W. H., et al: *Reserves and Economics of the Deep Delaware-Val Verde Basin Gas Play*, (Tech. Paper) JPT Dec., 1515

## J

- Jackson, R. F., et al: *Simulation of a Partial Pressure Maintenance Gas Cycling Project with a Compositional Model, Carson Creek Field, Alberta*, (Tech. Paper) JPT Jan., 38
- Jenkins, R. E. and Bush, D. C.: *Proper Hydration of Clays for Rock Property Determinations*, (Tech. Paper) JPT July, 800
- Jewett, R. L. and Schurz, G. F.: *Polymer Flooding—A Current Appraisal*, (Tech. Paper) JPT June, 675
- Johnson, G. A. and Mann, L.: *Predicted Results of Numeric Grid Models Compared With Actual Field Performance*, (Tech. Paper) JPT Nov., 1390
- Johnstone, C. W., et al: *The Thermal Neutron Decay Time Log*, (Tech. Paper) SPEJ Dec., 365
- Jones, D. M. and Erbar, J.: *Computer Determination of Data-Matched Equilibrium Ratios*, (Tech. Paper) JPT Aug., 1007

## K

- Kaufman, A.: *International Offshore Leasing Practices*, (Tech. Paper) JPT Mar., 247

- Kazemi, H.: *Pressure Buildup in Reservoir Limit Testing of Stratified Systems*, JPT Apr., 493; discussion, (Forum) JPT Aug., 943
- Kelldorf, W. F. N.: *Radioactive Tracer Surveying—A Comprehensive Report*, (Tech. Paper) JPT June, 661
- Kelly, T. E.: *The New Approach to Development of Alaska's Natural Resources*, (Tech. Paper) JPT Aug., 932
- Khamis, A. G. and Yancey, I. R.: *Submersible Pumping Operations in the Long Beach Unit*, (Tech. Paper) JPT Dec., 1480
- Khan, A. R.: *A Scaled Model Study of Water Coning*, JPT June, 771
- Kiel, O. M.: *A New Hydraulic Fracturing Process*, (Tech. Paper) JPT Jan., 89
- Kim, Y. S. and Hardy, H. R., Jr.: *A Clamp-On Strain Transducer for Use on Geologic Materials*, (Tech. Paper) SPEJ Mar., 41
- Kinnear, J. C., Jr.: *Production, Pollution and Professional Responsibility*, (Art.) JPT Apr., 448
- Kinney, W. L., et al: *Injection Well Stimulation with Micellar Solutions*, (Tech. Paper) JPT Dec., 1577
- Kipp, K. L., et al: *Application of Probability to the Design of Single-Point Moorings*, SPEJ Sept., 219
- Kirk, W. B., et al: *Injection Well Stimulation with Micellar Solutions*, (Tech. Paper) JPT Dec., 1577
- Klementich, E. F., et al: *Measurement of Casing Buckling in Producing Intervals*, (Tech. Paper) JPT Mar., 255
- Klotz, J. A.: *Vessel Motion Control Through Anchor-Line Design*, (Tech. Paper) JPT June, 685
- Koerperich, E. A.: *A Double-Electrode Method of Spontaneous Potential Logging*, JPT Nov., 1437
- Koth, A. K.: *A New Way to Compute Annular Friction Loss*, (Forum) JPT Jan., 8
- Krause, W. F., Jr., and Sizer, P. S.: *Selection Criteria for Subsurface Safety Equipment for Offshore Completions*, (Tech. Paper) JPT July, 793
- Kreisle, L. F. and Vance, J. M.: *Mathematical Analysis of the Effect of a Shock Sub on the Longitudinal Vibrations of an Oilwell Drill String*, (Tech. Paper) SPEJ Dec., 349
- Kumar, J. and Fatt, I.: *Specific Surface of Porous Materials*, (Forum) SPEJ Mar., 4
- Kuo, C. H., et al: *A Gravity Drainage Model for the Steam-Soak Process*, SPEJ June, 119
- Kwan, T. V., et al: *Simultaneous Solution of Multiphase Reservoir Flow Equation*, (Tech. Paper) SPEJ June, 99
- Kyte, J. R.: *A Centrifuge Method to Predict Matrix-Block Recovery in Fractured Reservoirs*, SPEJ June, 164

## L

- Lantz, R. B.: *Rigorous Calculation of Miscible Displacement Using Immiscible Reservoir Simulators*, SPEJ June, 192
- Lasater, R. M., et al: *Predicting Results of Sandstone Acidizing*, (Tech. Paper) JPT June, 693
- Letskeman, J. P. and Ridings, R. L.: *A Numerical Coning Model*, SPEJ Dec., 418
- Lewis, C. R. and Rose, S. C.: *A Theory Relating High Temperatures and Overpressures*, (Tech. Paper) JPT Jan., 11
- Loren, J. D. and Robinson, J. D.: *Relations Between Pore Size, Fluid and Matrix Properties, and NML Measurements*, SPEJ Sept., 268
- Lubinski, A. and Hansford, J. E.: *Analysis of Some Factors Related to Permissible Horizontal Motions of a Floating Drilling Vessel*, SPEJ Sept., 229
- Lummus, J. L.: *Drilling Optimization*, (Tech. Paper) JPT Nov., 1379

## M

- MacDonald, R. C. and Coats, K. H.: *Methods for Numerical Simulation of Water and Gas Coning*, SPEJ Dec., 425
- Mann, L. and Johnson, G. A.: *Predicted Results of Numeric Grid Models Compared With Actual Field Performance*, (Tech. Paper) JPT Nov., 1390
- Marsden, S. S. and Albrecht, R. A.: *Foams as Blocking Agents in Porous Media*, (Tech. Paper) SPEJ Mar., 51



- McCaskill, N., et al: *Performance of a Propane Slug Pilot in a Watered-Out Sand—South Ward Field*, (Tech. Paper) JPT Oct., 1209
- McGlamery, R. G. and Rike, J. L.: *Recent Innovations in Offshore Completion and Workover Systems*, (Tech. Paper) JPT Jan., 17
- McKinley, R. M. and Vela, S.: *How Areal Heterogeneities Affect Pulse-Test Results*, SPEJ June, 181
- McLemore, R. H.: *SPE Must Alter its Course in the 70's*, (Art.) JPT Feb., 121
- Meabon, H. P., et al: *Mobility Control Design for Miscible-Type Waterfloods Using Micellar Solutions*, (Tech. Paper) JPT Feb., 141
- Menzie, D. E. and Harvey, A. H.: *Polymer Solution Flow in Porous Media*, (Tech. Paper) SPEJ June, 111
- Miller, B. M., et al: *Design Criteria for Matrix Stimulation With Hydrochloric-Hydrofluoric Acid*, (Tech. Paper) JPT Apr., 433
- Milton, H. W., Jr., et al: *Mobility Control Design for Miscible-Type Waterfloods Using Micellar Solutions*, (Tech. Paper) JPT Feb., 141
- Misk, A., et al: *Log Analysis of Sand-Shale Sequences—A Systematic Approach*, JPT July, 867
- Montgomery, E. F., III, et al: *The Effect of Temperature on Irreducible Water Saturation and Relative Permeability of Unconsolidated Sands*, SPEJ June, 171
- Morgan, J. T. and Gordon, D. T.: *Influence of Pore Geometry on Water-Oil Relative Permeability*, (Tech. Paper) JPT Oct., 1199
- Morse, R. A. and Whiting, R. L.: *A Numerical Model Study of Gravitational Effects and Production Rate on Solution Gas Drive Performance of Oil Reservoirs*, JPT May, 625
- Mungan, N., et al: *Caustic Slug Injection in the Singleton Field*, (Tech. Paper) JPT Dec., 1569
- Myal, F. R. and Farouq Ali, S. M.: *Recovery of Penn-Grade Crude Oils by Steam*, (Tech. Paper) JPT June, 705

## N

- Nelligan, W. B., et al: *The Thermal Neutron Decay Time Log*, (Tech. Paper) SPEJ Dec., 365
- Nicholson, R. W., et al: *Caustic Slug Injection in the Singleton Field*, (Tech. Paper) JPT Dec., 1569

## O

- Ochs, H. J., Jr.: *Another Step Toward Enhancing Professionalism*, (Forum) JPT Apr., 442
- O'Dell, P. M. and Hirasaki, G. J.: *Representation of Reservoir Geometry for Numerical Simulation*, SPEJ Dec., 393
- Overpeck, A. C. and Holden, W. R.: *Well Imaging and Fault Detection in Anisotropic Reservoirs*, JPT Oct., 1317
- Owens, W. W. and Schneider, F. N.: *Sandstone and Carbonate Two- and Three-Phase Relative Permeability Characteristics*, SPEJ Mar., 75

## P

- Parker, R. G.: *Men, Money, and Responsibility in Pollution Control*, (Tech. Paper) JPT Jan., 47
- Parsons, R. W., et al: *Performance of the Fry In-Situ Combustion Project*, (Tech. Paper) JPT May, 551
- Patton, C. C. and Casad, B. M.: *Paraffin Deposition from Refined Wax-Solvent Systems*, (Tech. Paper) SPEJ Mar., 17
- Paxman, D. S., et al: *Kaybob South—Reservoir Simulation of a Gas Cycling Project with Bottom Water Drive* JPT Apr., 481
- Payne, R. D. and Herring, J. C.: *Texas Water—The Question of Quality* (Forum) JPT Dec., 1525
- Peterson, C. R.: *Roller Cutter Forces*, SPEJ Mar., 57
- Peyton, H. R.: *Arctic Engineering*, (Tech. Paper) JPT Sept., 1076
- Phillips, K. A., et al: *Determination of Acoustic Velocities for Natural Gas*, JPT July, 889
- Phillips, R. C. and Vetter, O. J. G.: *Prediction of Deposition of Calcium Sulfate Scale Under Down-Hole Conditions*, (Tech. Paper) JPT Oct., 1299
- Phocas, D. M., et al: *A Gravity Drainage Model for the Steam-Soak Process*, SPEJ June, 119

- Poston, S. W., et al: *The Effect of Temperature on Irreducible Water Saturation and Relative Permeability of Unconsolidated Sands*, SPEJ June, 171
- Poupon, A., et al: *Log Analysis of Sand-Shale Sequences—A Systematic Approach*, JPT July, 867
- Prats, M.: *A Method for Determining the Net Vertical Permeability Near a Well From In-Situ Measurements*, JPT May, 637
- Prentice, C. M.: *"Maximum Load" Casing Design*, (Tech. Paper) JPT July, 805
- Pritchard, K. C. G.: *Use of Uncertainty Analysis in Evaluating Hydrocarbon Pore Volume in the Rainbow-Zama Area*, (Tech. Paper) JPT Nov., 1357

## R

- Ramey, H. J., Jr.: *Graphical Interpretations for Gas Material Balances*, (Forum) JPT July, 837
- Short-Time Well Test Data Interpretation in the Presence of Skin Effect and Wellbore Storage, JPT Jan., 97
- Ramey, H. J., Jr., and Wattenbarger, R. A.: *An Investigation of Wellbore Storage and Skin Effect in Unsteady Liquid Flow: II. Finite Difference Treatment*, SPEJ Sept., 291
- Ramey, H. J., Jr., et al: *An Investigation of Wellbore Storage and Skin Effect in Unsteady Liquid Flow: I. Analytical Treatment*, SPEJ Sept., 279
- The Effect of Temperature on Irreducible Water Saturation and Relative Permeability of Unconsolidated Sands, SPEJ June, 171
- Ratliff, N. W., et al: *A Steam-Soak Model for Depletion-Type Reservoirs*, JPT June, 757
- Raulins, G. M.: *Well Servicing by Pump-Down Techniques*, (Tech. Paper) JPT Feb., 161
- Raza, S. H., Jr.: *Foam in Porous Media: Characteristics and Potential Applications*, SPEJ Dec., 328
- Redic, J. G.: *Evaluation Problems as Related to Appalachian Area Bank Financing*, (Tech. Paper) JPT Oct., 1291
- Reid, L. S.: *Predicting the Capabilities of Glycol Dehydrators*, (Tech. Paper) JPT Aug., 925
- Richardson, E. A. and Hamby, T. W.: *Consolidation of Silty Sands with an Epoxy Resin Overflush Process*, (Tech. Paper) JPT Sept., 1103
- Ridings, R. L. and Letkeman, J. P.: *A Numerical Coning Model*, SPEJ Dec., 418
- Rike, J. L. and McGlamery, R. G.: *Recent Innovations in Offshore Completion and Workover Systems*, (Tech. Paper) JPT Jan., 17
- Riley, H. G.: *A Short Cut to Stabilized Gas Well Productivity*, (Tech. Paper) JPT May, 537
- Roberson, G. R. and Schremp, F. W.: *Optimizing the Distribution of Cathodic Protection Current*, (Tech. Paper) JPT July, 812
- Roberts, L. D., et al: *Predicting Results of Sandstone Acidizing*, (Tech. Paper) JPT June, 693
- Robinson, J. D. and Loren, J. D.: *Relations Between Pore Size, Fluid and Matrix Properties, and NML Measurements*, SPEJ Sept., 268
- Robinson, J. D. and Senturia, S. D.: *Nuclear Spin-Lattice Relaxation of Liquids Confined in Porous Solids*, SPEJ Sept., 237
- Rogers, L. W., et al: *Reserves and Economics of the Deep Delaware-Val Verde Basin Gas Play*, (Tech. Paper) JPT Dec., 1515
- Roof, J. G.: *Snap-off of Oil Droplets in Water-Wet Pores*, SPEJ Mar., 85
- Rose, S. C. and Lewis, C. R.: *A Theory Relating High Temperatures and Overpressures*, (Tech. Paper) JPT Jan., 11

## S

- Salo, E. A.: *Maintenance Improvements on Offshore Fuel Oil Terminals*, (Forum) JPT May, 562
- Sandrea, R.: *On Estimating Recovery Efficiency in Depletion Drive and Water Drive Reservoirs*, (Forum) JPT Mar., 277
- Sayegh, E. F. and Doyle, R. E.: *Real Gas Transient Analysis of Three-Rate Flow Tests*, (Tech. Paper) JPT Nov., 1347
- Schaller, H. E., et al: *Case Histories of Production Logging*, (Tech. Paper) JPT Feb., 207
- Schneider, F. N. and Owens, W. W.: *Sandstone and Carbonate Two- and Three-Phase Relative Permeability Characteristics*, SPEJ Mar., 75

- Schoettl, V., *et al*: Design Criteria for Matrix Stimulation with Hydrochloric-Hydrofluoric Acid, (Tech. Paper) JPT Apr., 433
- Schremp, F. W. and Roberson, G. R.: Optimizing the Distribution of Cathodic Protection Current, (Tech. Paper) JPT July, 812
- Schrider, L. A. and Cerullo, R. E.: A Decline Curve Pitfall Using Least-Squares Solution, (Forum) JPT Apr., 441
- Schrider, L. A., *et al*: An Evaluation of the East Canton Oil Field Waterflood, (Tech. Paper) JPT Nov., 1371
- Schurz, G. F. and Jewett, R. L.: Polymer Flooding—A Current Appraisal, (Tech. Paper) JPT June, 675
- Schwartz, R. J., *et al*: The Thermal Neutron Decay Time Log, (Tech. Paper) SPEJ Dec., 365
- Senturia, S. D. and Robinson, J. D.: Nuclear Spin-Lattice Relaxation of Liquids Confined in Porous Solids, SPEJ Sept., 237
- Shain, S. A., *et al*: A Gravity Drainage Model for the Steam-Soak Process, SPEJ June, 119
- Shepler, J. C. and Curtis, L. B.: Dubai Khazzan—Pioneer of Large Undersea Storage Systems, (Tech. Paper) JPT Sept., 1065
- Shutler, N. D.: Numerical Three-Phase Model of the Two-Dimensional Steamflood Process, SPEJ Dec., 405
- Sibley, W. P.: A Method for Handling Spatially Varying Fluid Properties in a Simulation Model for a Fissured Reservoir, (Tech. Paper) SPEJ Mar., 25
- Sinclair, A. R.: Rheology of Viscous Fracturing Fluids, (Tech. Paper) JPT June, 711
- Sinha, B. K.: A New Technique to Determine the Equivalent Viscosity of Drilling Fluids Under High Temperatures and Pressures, (Tech. Paper) SPEJ Mar., 33
- Sizer, P. S. and Krause, W. F., Jr.: Selection Criteria for Subsurface Safety Equipment for Offshore Completions, (Tech. Paper) JPT July, 793
- Skelly, W. G. and Dieball, D. E.: Behavior of Chromate in Drilling Fluids Containing Chrome Lignosulfonate, SPEJ June, 140
- Smith, F. W.: The Behavior of Partially Hydrolyzed Polyacrylamide Solutions in Porous Media, (Tech. Paper) JPT Feb., 148
- Smith, L. R. and Yarborough, L.: Solvent and Driving Gas Compositions for Miscible Slug Displacement, SPEJ Sept., 298
- Smith, M. B.: Probability Models for Petroleum Investment Decisions, (Tech. Paper) JPT May, 543
- Smith, R. C. and Steffensen, R. J.: Computer Study of Factors Affecting Temperature Profiles in Water Injection Wells, JPT Nov., 1447
- Smith, T. K.: Discussion on Fracture Gradient Prediction and its Application in Oilfield Operations, JPT Feb., 219
- Smits, L. J. M. and Duyvis, E. M.: A Test for the Wettability of Carbonate Rocks, (Forum) SPEJ Mar., 3
- Spivak, A. and Coats, K. H.: Numerical Simulation of Coning Using Implicit Production Terms, SPEJ Sept., 257
- Sport, M. C.: Design and Operation of Dissolved-Gas Flotation Equipment for the Treatment of Oilfield Produced Brines, (Tech. Paper) JPT Aug., 918
- Stalkup, F. I.: Displacement of Oil by Solvent at High Water Saturation, (Tech. Paper) SPEJ Dec., 337
- Standing, M. B.: Inflow Performance Relationships for Damaged Wells Producing by Solution-Gas Drive, (Forum) JPT Nov., 1399
- Steffensen, R. J. and Smith, R. C.: Computer Study of Factors Affecting Temperature Profiles in Water Injection Wells, JPT Nov., 1447
- Steffensen, R. J., *et al*: Ante Creek—A Miscible Flood Using Separator Gas and Water Injection, (Tech. Paper) JPT Oct., 1232
- Sterner, T. E., *et al*: Shale Oil Recovery by In-Situ Retorting—A Pilot Study, (Tech. Paper) JPT Dec., 1520
- Stevens, R. G., *et al*: Effect of Direct Electrical Current on Permeability of Sandstone Cores, (Tech. Paper) JPT July, 830
- Stewart, P. R.: Low-Permeability Gas Well Performance at Constant Pressure, (Tech. Paper) JPT Sept., 1149
- Stiff, H. A., Jr.: Interpolating and Extrapolating Drilling Fluid Viscosities to Reference Temperatures, (Forum) JPT Oct., 1247
- Stone, H. L.: Probability Model for Estimating Three-Phase Relative Permeability, JPT Feb., 214
- Stone, H. L., *et al*: Simultaneous Solution of Multiphase Reservoir Flow Equations, (Tech. Paper) SPEJ June, 99
- Stratton, R., *et al*: Case Histories of Production Logging, (Tech. Paper) JPT Feb., 207
- Streeter, V. L. and Wylie, E. B.: Natural Gas Pipeline Transients, SPEJ Dec., 357
- Strong, J. F., *et al*: Reserves and Economics of the Deep Delaware-Val Verde Basin Gas Play, (Tech. Paper) JPT Dec., 1515
- Suman, G. O., Jr., *et al*: Measurement of Casing Buckling in Producing Intervals, (Tech. Paper) JPT Mar., 255
- Sutko, A. A.: The Effect of Axial Tension on the Deflection of Centralized Casing, (Forum) JPT Jan., 7
- Sweeney, M., *et al*: A Computerized File for Directional Well Courses, (Tech. Paper) JPT Mar., 267
- Swift, S. C. and Holmes, C. S.: Calculation of Circulating Mud Temperatures, (Tech. Paper) JPT June, 670

## T

- Thomas, G. B., *et al*: A Computerized File for Directional Well Courses, (Tech. Paper) JPT Mar., 267
- Thomas, G. W. and Zana, E. T.: Some Effects of Contaminants on Real Gas Flow, JPT Sept., 1157
- Thomas, L. K., *et al*: Determination of Acoustic Velocities for Natural Gas, JPT July, 889
- Thrasher, L. W. and Aagaard, P. M.: Measured Wave Force Data on Offshore Platforms, JPT Mar., 339
- Truitt, N. E., *et al*: A Steam-Soak Model for Depletion-Type Reservoirs, JPT June, 757

## V

- van Poolen, H. K.: On the Subject of Sandstone Acidizing, (Forum) JPT June, 720
- van Poolen, H. K. and Hoover, D. B.: Waste Disposal and Earthquakes at the Rocky Mountain Arsenal, Derby, Colorado, (Tech. Paper) JPT Aug., 983
- Vance, J. M. and Kreisle, L. F.: Mathematical Analysis of the Effect of a Shock Sub on the Longitudinal Vibrations of an Oilwell Drill String, (Tech. Paper) SPEJ Dec., 349
- Vela, S. and McKinley, R. M.: How Areal Heterogeneities Affect Pulse-Test Results, SPEJ June, 181
- Vetter, O. J. G. and Phillips, R. C.: Prediction of Deposition of Calcium Sulfate Scale Under Down-Hole Conditions, (Tech. Paper) JPT Oct., 1299
- von Tiehl, R. D., *et al*: A Computerized File for Directional Well Courses, (Tech. Paper) JPT Mar., 267

## W

- Wahl, J. S., *et al*: The Thermal Neutron Decay Time Log, (Tech. Paper) SPEJ Dec., 365
- Warren, H. G. and Hough, E. W.: Interfacial Tension of the Methane-Normal Heptane System, (Forum) SPEJ Dec., 327
- Wasson, J. A., *et al*: An Evaluation of the East Canton Oil Field Waterflood, (Tech. Paper) JPT Nov., 1371
- Wattenbarger, R. A.: Maximizing Seasonal Withdrawals from Gas Storage Reservoirs, (Tech. Paper) JPT Aug., 994
- Wattenbarger, R. A.: Simulation of a Partial Pressure Maintenance Gas Cycling Project with a Compositional Model, Carson Creek Field, Alberta, (Tech. Paper) JPT Jan., 38
- Wattenbarger, R. A. and Ramey, H. J., Jr.: An Investigation of Wellbore Storage and Skin Effect in Unsteady Liquid Flow: II. Finite Difference Treatment, SPEJ Sept., 291
- Watts, R. J., *et al*: An Evaluation of the East Canton Oil Field Waterflood, (Tech. Paper) JPT Nov., 1371
- Webb, R. W. and Wichmann, P. A.: Neutron Activation Logging for Silicon to Aluminum Ratios, (Tech. Paper) JPT Feb., 201
- Weinstein, H. G., *et al*: Simultaneous Solution of Multiphase Reservoir Flow Equations, (Tech. Paper) SPEJ June, 99
- Wheeler, J. D.: Method for Calculating Forces Produced by Irregular Waves, JPT Mar., 359

- Whiting, R. L. and Morse, R. A.: *A Numerical Model Study of Gravitational Effects and Production Rate on Solution Gas Drive Performance of Oil Reservoirs*, JPT May, 625
- Whitsitt, N. F., and Dysart, G. R.: *The Effect of Temperature On Stimulation Design*, JPT Apr., 493
- Wichmann, P. A. and Webb, R. W.: *Neutron Activation Logging for Silicon to Aluminum Ratios*, (Tech. Paper) JPT Feb., 201
- Williams, B. B.: *Fluid Loss from Hydraulically Induced Fractures*, JPT July, 882
- Woodhall, R. J. and Chapin, R. L.: *Analysis of an Operating Telemetry System at Elk Basin Field*, (Tech. Paper) JPT Apr., 397
- Woods, E. G.: *Pulse-Test Response of a Two-Zone Reservoir*, SPEJ Sept., 245
- Wylie, E. B. and Streeter, V. L.: *Natural Gas Pipeline Transients*, SPEJ Dec., 357

## Y

- Yancey, I. R. and Khamis, A. G.: *Submersible Pumping Operations in the Long Beach Unit*, (Tech. Paper) JPT Dec., 1480
- Yarborough, L. and Smith, L. R.: *Solvent and Driving Gas Compositions for Miscible Slug Displacement*, SPEJ Sept., 298
- Yates, D., et al.: *Causes and Prevention of Failures in Cement Pipe Linings*, (Tech. Paper) JPT Jan., 51
- Yoelin, S. D., et al.: *Production Logging as Used to Solve Water Injection Problems in the Huntington Beach Offshore Field*, (Tech. Paper) JPT Sept., 1083
- Ysrael, S., et al.: *The Effect of Temperature on Irreducible Water Saturation and Relative Permeability of Unconsolidated Sands*, SPEJ June, 171

## Z

- Zana, E. T. and Thomas, G. W.: *Some Effects of Contaminants on Real Gas Flow*, JPT Sept., 1157

## Subject Index

### A

- Acidizing: effect of temperature on design, JPT Apr., 493  
hydrochloric-hydrofluoric: design criteria for matrix stimulation, (Tech. Paper) JPT Apr., 433  
sandstone, (Forum) JPT June, 720  
predicting results, (Tech. Paper) June, 693
- Acoustic velocity: natural gas: determination of, JPT July, 889
- Additives: fluid loss: results in hydraulically induced fractures, JPT July, 882
- Adsorption: polymer: behavior of partially hydrolyzed polyacrylamide solutions in porous media, (Tech. Paper) JPT Feb., 148  
water: alteration of shale, (Tech. Paper) JPT Sept., 1141
- Air injection: Fry in-situ combustion project: performance of, (Tech. Paper) JPT May, 551
- Alaska: natural resources: new approach to development, (Tech. Paper) JPT Aug., 932
- Alcohol flooding: tests: NMR technique for analysis of samples, (Forum) SPEJ Mar., 7
- Aluminum: silicon ratios: determination by neutron activation logging, (Tech. Paper) JPT Feb., 201
- Anadarko basin: *See* Oklahoma
- Analogy: two-phase displacement with two-component miscible displacement using immiscible reservoir simulators, SPEJ June, 192
- Analytical methods: wellbore storage and skin effect in unsteady liquid flow, SPEJ Sept., 279
- Anchors: lines: vessel motion control through design, (Tech. Paper) JPT June, 685  
small: tests to predict full-scale holding power, (Tech. Paper) SPEJ June, 127
- Anisotropic reservoirs: net vertical permeability: method for determining near a well from in-situ measurements, JPT May, 637  
well imaging and fault detection, JPT Oct., 1317
- Annulus: friction loss: new way to compute, (Forum) JPT Jan., 8
- Ante Creek Beaverhill Lake pool: *See* Canada
- Ante Creek field: *See* Canada
- Appalachian area: bank financing: evaluation problems, (Tech. Paper) JPT Oct., 1291
- Aquifers: pressure observations and water densities: relation to problems in gas storage, (Tech. Paper) JPT Dec., 1492
- Arabia: Dubai Khazzan: pioneer of large undersea storage systems, (Tech. Paper) JPT Sept., 1065
- Arctic: engineering, (Tech. Paper) JPT Sept., 1076
- Automation: analysis of a computer controlled telemetry system at Elk Basin field, (Tech. Paper) JPT Apr., 397  
computer production control system: planning and implementing, (Tech. Paper) JPT Feb., 134

### B

- Bidding: patterns: Texas offshore, (Tech. Paper) JPT Mar., 283

- Big Horn basin: *See* Wyoming
- Big Piney-Labarge field: *See* Wyoming
- Bits: jet: aspects of deep drilling in the Carpathian basin, (Tech. Paper) JPT Feb., 125  
roller cutter forces, SPEJ Mar., 57  
selection: in optimized drilling techniques, (Tech. Paper) JPT Nov., 1379
- Blowouts: prevention: aspects of deep drilling in the Carpathian basin, (Tech. Paper) JPT Feb., 125
- Boreholes: irregular: interpretation of injectivity profiles, (Tech. Paper) JPT Sept., 1089
- Bottom-water drive: gas cycling project: reservoir simulation of Kaybob South field, Canada, JPT Apr., 481
- Brines: *See* Water: salt
- Buildup curves: *See* Pressure buildup
- Burkett Unit: *See* Kansas

### C

- Calcium sulfate: scale: prediction of deposition under down-hole conditions, (Tech. Paper) JPT Oct., 1299
- California: Estero Bay marine terminal: maintenance improvements on fuel oil facility, (Forum) JPT May, 562  
Hibberd pool: miscible flooding for tertiary oil recovery, (Tech. Paper) JPT May, 529  
Huntington Beach field: computerized file for directional well courses offshore, (Tech. Paper) JPT Mar., 267  
production logging used to solve water injection problems offshore, (Tech. Paper) JPT Sept., 1083
- Kern River field: steam displacement, (Tech. Paper) JPT Oct., 1225  
matrix stimulation with hydrochloric-hydrofluoric acid: design criteria, (Tech. Paper) JPT Apr., 433
- Monterey Bay marine terminal: maintenance improvements on fuel oil facility, (Forum) JPT May, 562
- Santa Barbara: drilling in 1,300 feet of channel water, (Tech. Paper) JPT Jan., 27  
oil pollution control efforts, (Tech. Paper) JPT Dec., 1511  
pollution control in channel, (Tech. Paper) JPT Jan., 47
- Wilmington field: submersible pumping operations, (Tech. Paper) JPT Dec., 1480
- Canada: Ante Creek Beaverhill Lake pool: miscible flood using separator gas and water injection, (Tech. Paper) JPT Oct., 1232  
Ante Creek field: recent miscible slug flood, (Tech. Paper) JPT May, 529  
Carson Creek field: simulation of a partial pressure maintenance gas cycling project with a compositional model, (Tech. Paper) JPT Jan., 38  
Golden Spike field: recent miscible slug flood, (Tech. Paper) JPT May, 529



- Kaybob Beaverhill Lake pool: numeric grid model results compared with actual field performance, (Tech. Paper) JPT Nov., 1390
- Kaybob South field: reservoir simulation; gas cycling project with bottom water drive, JPT Apr., 481
- Lobstick Cardium unit: recent miscible slug flood, (Tech. Paper) JPT May, 529
- Mitsue Gilwood pool: numeric grid model results compared with actual field performance, (Tech. Paper) JPT Nov., 1390
- Rainbow Keg River pools: recent miscible slug flood, (Tech. Paper) JPT May, 529
- Rainbow-Zama area: use of uncertainty analysis in evaluating hydrocarbon pore volume, (Tech. Paper) JPT Nov., 1357
- Virden, Manitoba, area: scale removal, (Tech. Paper) JPT June, 701
- Capillary flow: water-wet pores: snap-off of oil droplets, SPEJ Mar., 85
- Capillary pressure: importance in steamflood process: numerical two-dimensional, three-phase model, SPEJ Dec., 405
- Carbon dioxide: effects on real gas flow, JPT Sept., 1157
- Carbonate rocks: test for the wettability, (Forum) SPEJ Mar., 3
- Carbonates: relative permeability characteristics: two- and three-phase, SPEJ Mar., 75
- Carpathian basin: *See* Hungary
- Carson Creek field: *See* Canada
- Case histories: *See* Field case history
- Casing: buckling: measurement in producing intervals, (Tech. Paper) JPT Mar., 255
- centralized: effect of axial tension on deflection, (Forum) JPT Jan., 7
- design: maximum load, (Tech. Paper) JPT July, 805
- perforated: explosive detonation tested in hydraulically fractured gas wells, (Tech. Paper) JPT Apr., 403
- Cathodic protection: current: optimizing the distribution, (Tech. Paper) JPT July, 812
- Cement: pipe linings: causes and prevention of failures, (Tech. Paper) JPT Jan., 51
- Cementing: multiple tubingless wells: recent innovations in offshore systems, (Tech. Paper) JPT Jan., 17
- Centrifuge: tests: method to predict matrix-block recovery in fractured reservoirs, SPEJ June, 164
- Chocolate Bayou field: *See* Texas
- Clays: proper hydration for rock property determinations, (Tech. Paper) JPT July, 800
- water adsorption: shale alteration, (Tech. Paper) JPT Sept., 1141
- Coatings: plastic: effect on paraffin deposition from refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17
- Collapse strength: casing: maximum load design, (Tech. Paper) JPT July, 805
- Colorado: professional engineer examinations and registration, (Forum) JPT Apr., 442
- Rocky Mountain Arsenal: waste disposal and earthquakes, (Tech. Paper) JPT Aug., 983
- Combination drive: gas-water: probability model for estimating three-phase relative permeability, JPT Feb., 214
- Combustion: *See also* Underground combustion
- in-situ retorting: pilot study of shale oil recovery, (Tech. Paper) JPT Dec., 1520
- sustained: effect of water injection in porous medium, SPEJ June, 145
- Compaction: shales: Chocolate Bayou field, Texas, (Forum) JPT May, 566
- Completion: *See* Well completion
- Completion practice: *See* Well completion
- Composition: solvent and driving gas: miscible slug displacement, SPEJ Sept., 298
- Compressibility: factor: graphical interpretations for gas material balances, (Forum) JPT July, 837
- Computers: file: for directional well courses, (Tech. Paper) JPT Mar., 267
- production control system: planning and implementing, (Tech. Paper) JPT Feb., 134
- programs: determination of data-matched equilibrium ratios, (Tech. Paper) JPT Aug., 1007
- linear, to maximize seasonal withdrawals; gas storage reservoir, (Tech. Paper) JPT Aug., 994
- method for controlling instability of liquid saturation computations, (Forum) SPEJ Mar., 5
- polymer flooding, (Tech. Paper) JPT June, 675
- probabilistic economic model for petroleum investment decisions, (Tech. Paper) JPT May, 543
- pulsed neutron logging, (Tech. Paper) JPT Apr., 424
- Saraband; log analysis of sand-shale sequences, JPT July, 867
- wave forces; data analysis and engineering calculation method, JPT Mar., 368
- study: factors affecting temperature profiles in water injection wells, JPT Nov., 1447
- telemetering system: analysis of operations at Elk Basin field, (Tech. Paper) JPT Apr., 397
- Univac 1108: real gas transient analysis: three-rate flow tests, (Tech. Paper) JPT Nov., 1347
- Condensates: gas cycling project: simulation of partial pressure maintenance with a compositional model, Carson Creek field, Canada, (Tech. Paper) JPT Jan., 38
- Coning: *See also* Gas coning and Water coning
- numerical simulation using implicit production terms, SPEJ Sept., 257
- Contamination: effects on real gas flow, JPT Sept., 1157
- Controls: computer production system: planning and implementing, (Tech. Paper) JPT Feb., 134
- mobility: design for miscible-type waterfloods using micellar solutions, (Tech. Paper) JPT Feb., 141
- oil pollution: efforts in Santa Barbara, California, (Tech. Paper) JPT Dec., 1511
- pollution: men, money, and responsibility, (Tech. Paper) JPT Jan., 47
- shale: with balanced-activity oil-continuous muds, JPT Oct., 1309
- vessel motion: through anchor-line design, (Tech. Paper) JPT June, 685
- Core analysis: design criteria for matrix stimulation: hydrochloric-hydrofluoric acid, (Tech. Paper) JPT Apr., 433
- water-oil relative permeability: influence of pore geometry, (Tech. Paper) JPT Oct., 1199
- Cores: heterogeneities: effects on waterflood relative permeabilities; numerical investigation, SPEJ Dec., 381
- rock property determinations: proper hydration of clays for, (Tech. Paper) JPT July, 800
- sandstone: effect of direct electrical current on permeability, (Tech. Paper) JPT July, 830
- Correlations: isobaric heat capacity with temperature and gas gravity: determination of acoustic velocities, JPT July, 889
- polarographic data to corrosion rate: drilling fluids containing chrome lignosulfonate, SPEJ June, 140
- postulated straight-line: Texas offshore bidding patterns, (Tech. Paper) JPT Mar., 283
- pseudocritical properties with gas gravity: determination of acoustic velocities, JPT July, 889
- stabilization factor for gas wells, (Tech. Paper) JPT May, 537
- theory with field data: relating high temperatures and overpressures, (Tech. Paper) JPT Jan., 11
- Corrosion: drilling fluids containing chrome lignosulfonate, SPEJ June, 140
- hydrogen sulfide removal: waterflood injection water, (Tech. Paper) JPT Aug., 913
- Costs: drilling optimization, (Tech. Paper) JPT Nov., 1371
- submersible pumping operations: Long Beach Unit, (Tech. Paper) JPT Dec., 1480
- Crossflow: model: steam-soak for depletion-type reservoirs, JPT June, 757
- stratified systems: pressure buildup in reservoir limit testing, JPT Apr., 503; discussion, (Forum) JPT Aug., 943
- Crude oils: Penn-Grade: recovery by steam, (Tech. Paper) JPT June, 705
- Cycling: *See* Gas cycling

## D

- Data: field: correlation with theory relating high temperatures and overpressures, (Tech. Paper) JPT Jan., 11
- new technique for determining reservoir description, SPEJ Mar., 66
- wave forces: analysis and engineering calculation method, JPT Mar., 368
- analysis: Gulf of Mexico, JPT Mar., 347
- offshore platforms: Gulf of Mexico, JPT Mar., 339
- well test: interpretation in presence of skin effect and wellbore storage, JPT Jan., 97
- Decision making: probability models for petroleum investment, (Tech. Paper) JPT May, 543

Decline curves: analysis: problems as related to Appalachian area bank financing, (Tech. Paper) JPT Oct., 1291  
 pitfall using least-squares solution, (Forum) JPT Apr., 441  
 Deflection: centralized casing: effect of axial tension, (Forum) JPT Jan., 7  
 Dehydrators: glycol: predicting capabilities, (Tech. Paper) JPT Aug., 925  
 Delaware-Val Verde Basin: *See* New Mexico and Texas  
 Density: water: in aquifers; relation to problems in gas storage, (Tech. Paper) JPT Dec., 1492  
 Departure curves: thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365  
 Depletion: reservoirs: steam-soak model, JPT June, 757  
 Deposition: paraffin: from refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17  
 scale: calcium sulfate; prediction under down-hole conditions, (Tech. Paper) JPT Oct., 1299  
 Design: anchor-line: vessel motion control through, (Tech. Paper) JPT June, 685  
 casing: maximum load, (Tech. Paper) JPT July, 805  
 criteria: matrix stimulation with hydrochloric-hydrofluoric acid, (Tech. Paper) JPT Apr., 433  
 dissolved-gas flotation equipment: treatment of oilfield produced brines, (Tech. Paper) JPT Aug., 918  
 drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999  
 equipment for drilling in 1,300 feet of water, Santa Barbara Channel, California, (Tech. Paper) JPT Jan., 27  
 mobility control: miscible-type waterfloods using micellar solutions, (Tech. Paper) JPT Feb., 141  
 offshore structures: analysis of wave force data, JPT Mar., 347  
 Gulf of Mexico; measured wave force data, JPT Mar., 339  
 pulse tests, JPT May, 618  
 safety equipment: subsurface offshore completions, (Tech. Paper) JPT July, 793  
 single-point moorings: application of probability, SPEJ Sept., 219  
 stimulation treatments: effect of temperature, JPT Apr., 493  
 strain transducer, clamp-on type: use on geologic materials, (Tech. Paper) SPEJ Mar., 41  
 Sunflower helium plant, (Tech. Paper) JPT Sept., 1098  
 telemetering system: analysis of operations at Elk Basin field, (Tech. Paper) JPT Apr., 397  
 Development: Alaska's natural resources: new approach, (Tech. Paper) JPT Aug., 932  
 gas saturation: during solution-gas drive in an oil layer below a gas cap, SPEJ Sept., 211  
 mineral: undersea legal problems, (Tech. Paper) JPT Mar., 237  
 oil and gas: evaluation problems as related to Appalachian area bank financing, (Tech. Paper) JPT Oct., 1291  
 Difference equations: computing liquid saturations of transient radial flow of two phases, (Forum) SPEJ Mar., 5  
 Diffusivity: field and numerical levels: use of immiscible programs to calculate miscible displacement, SPEJ June, 192  
 hydraulic: how areal heterogeneities affect pulse-test results, SPEJ June, 181  
 Directional wells: computerized file, (Tech. Paper) JPT Mar., 267  
 Displacement mechanism: *See also* various types such as LPG injection, Miscible displacement, Thermal recovery of oil, and Waterflooding  
 foam in porous media: characteristics and potential applications, SPEJ Dec., 328  
 oil by solvent: high water saturation, (Tech. Paper) SPEJ Dec., 337  
 steam: Kern River field, California, (Tech. Paper) JPT Oct., 1225  
 three-phase relative permeability: probability model for estimating, JPT Feb., 214  
 Disposal: waste: Rocky Mountain Arsenal, Derby, Colorado, (Tech. Paper) JPT Aug., 983  
 Dissolved-gas drive: *See* Solution-gas drive  
 Distribution: cathodic protection current: optimizing the distribution, (Tech. Paper) JPT July, 812  
 Drill bit: *See* Bits

Drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999  
 Drill pipe: failure: related to permissible horizontal motions of a floating drilling vessel, SPEJ Sept., 229  
 Drill stem: longitudinal vibrations: mathematical analysis of effect of shock sub, (Tech. Paper) SPEJ Dec., 349  
 Drilling: *See also* Offshore drilling  
 casing design: maximum load, (Tech. Paper) JPT July, 805  
 deep: aspects in the Carpathian basin, (Tech. Paper) JPT Feb., 125  
 directional: computerized file for well courses, (Tech. Paper) JPT Mar., 267  
 drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999  
 drill string: mathematical analysis of effect of shock sub on longitudinal vibrations, (Tech. Paper) SPEJ Dec., 349  
 floating vessel: analysis of some factors related to permissible horizontal motions, SPEJ Sept., 229  
 optimization, (Tech. Paper) JPT Nov., 1379  
 semisubmersible vessels: analysis of motions in waves, SPEJ Sept., 311  
 vessel: small-anchor tests to predict full-scale holding power, (Tech. Paper) SPEJ June, 127  
 Drilling fluids: chrome lignosulfonate: behavior of chromate, SPEJ June, 140  
 circulating temperatures: calculation of, (Tech. Paper) JPT June, 670  
 equivalent viscosity: new technique to determine under high temperatures and pressures, (Tech. Paper) SPEJ Mar., 33  
 shale control with balanced-activity oil-continuous muds, JPT Oct., 1309  
 viscosities: interpolating or extrapolating to reference temperatures, (Forum) JPT Oct., 1247  
 Dubai Khazzan: undersea storage: pioneer of large systems, (Tech. Paper) JPT Sept., 1065

## E

Earthquakes: Colorado: Rocky Mountain Arsenal, (Tech. Paper) JPT Aug., 983  
 East Canton field: *See* Ohio  
 East Tia Juana project: *See* Venezuela  
 Economics: computer production control system: planning and implementing, (Tech. Paper) JPT Feb., 134  
 development today in Alaska: new approach to natural resources, (Tech. Paper) JPT Aug., 932  
 drilling optimization, (Tech. Paper) JPT Nov., 1371  
 gas play: deep Delaware-Val Verde basin, (Tech. Paper) JPT Dec., 1515  
 natural gas at any price, (Forum) JPT Aug., 937  
 probability models for petroleum investment decisions, (Tech. Paper) JPT May, 543  
 telemetering system: Elk Basin field (Tech. Paper) JPT Apr., 397  
 Efficiency: recovery: nomograph for estimating in depletion drive and water drive reservoirs, (Forum) JPT Mar., 277  
 Electric logging: *See* Well logging  
 Electrical potential: direct current effect on permeability of sandstone cores, (Tech. Paper) JPT July, 830  
 Electrode: double: spontaneous potential logging method, JPT Nov., 1437  
 Electroosmosis: effect on permeability of sandstone cores, (Tech. Paper) JPT July, 830  
 Elk Basin field: *See* Montana and Wyoming  
 Energy: natural gas: supply and demand, (Forum) JPT Aug., 937  
 Engineering: arctic, (Tech. Paper) JPT Sept., 1076  
 Engineers: professionalism: another step toward enhancing, (Forum) JPT Apr., 442  
 Enriched gas drive: solvent and driving gas compositions for miscible slug displacement, SPEJ Sept., 298  
 Epoxy resin: overflush process: consolidation of silty sands, (Tech. Paper) JPT Sept., 1103  
 Equation of state: Benedict-Webb-Rubin: natural gas: determination of acoustic velocities, JPT July, 889  
 Equilibrium ratio: data matched: computer determination, (Tech. Paper) JPT Aug., 1007  
 Equipment: *See also* names of various types  
 anchor line: vessel motion control through design, (Tech. Paper) JPT June, 685



- artificial lift: operations and costs of submersible pumping operations, (Tech. Paper) JPT Dec., 1480
- bit: roller cutter forces, SPEJ Mar., 57
- casing, centralized: effect of axial tension on deflection, (Forum) JPT Jan., 7
- design for drilling in 1,300 feet of water, Santa Barbara Channel, California, (Tech. Paper) JPT Jan., 27
- dissolved-gas flotation: design and operation for treatment of oilfield produced brines, (Tech. Paper) JPT Aug., 918
- drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999
- drill string: effect of shock sub on longitudinal vibrations; mathematical analysis, (Tech. Paper) SPEJ Dec., 349
- extraction apparatus for wettability test of carbonate rocks, (Forum) SPEJ Mar., 3
- Fann consistometer: determine equivalent viscosity of drilling fluids under high temperatures and pressures, (Tech. Paper) SPEJ Mar., 33
- floating drilling vessel: analysis of some factors related to permissible horizontal motions, SPEJ Sept., 229
- fuel oil terminals: maintenance improvements on offshore installations, (Forum) JPT May, 562
- glycol dehydrators: predicting capabilities, (Tech. Paper) JPT Aug., 925
- kinkmeter: measurement of casing buckling in producing intervals, (Tech. Paper) JPT Mar., 255
- moorings: design of single-point type using probability, SPEJ Sept., 219
- permeameter: design criteria for matrix stimulation with hydrochloric-hydrofluoric acid, (Tech. Paper) JPT Apr., 433
- safety: selection criteria for subsurface offshore completions, (Tech. Paper) JPT July, 793
- strain transducer: clamp-on type; use on geologic materials, (Tech. Paper) SPEJ Mar., 41
- undersea storage: Dubai Khazzan; pioneer of large systems, (Tech. Paper) JPT Sept., 1065
- well servicing: pump-down techniques, (Tech. Paper) JPT Feb., 161
- Estero Bay marine terminal: *See* California
- Ethylene diamine tetraacetic acid: scale removal: Virden, Manitoba, area, (Tech. Paper) JPT June, 701
- Evaluations: *See also* Field case histories, Field tests, Formation evaluation, Laboratory studies and Performance predictions
- force of ocean waves: offshore drilling structures, JPT Mar., 368
- hydrocarbon pore volume: use of uncertainty analysis: Rainbow-Zama area, (Tech. Paper) JPT Nov., 1357
- petroleum property: effects of 1969 Tax Reform Act, (Tech. Paper) JPT Dec., 1475
- polymer flooding, (Tech. Paper) JPT June, 675
- problems: as related to Appalachian area bank financing, (Tech. Paper) JPT Oct., 1291
- waterflood: East Canton oil field, Ohio, (Tech. Paper) JPT Nov., 1371
- Exploitation: Alaska's natural resources: new approach to development, (Tech. Paper) JPT Aug., 932
- Explosives: fracture stimulation: tested in hydraulically fractured gas wells, (Tech. Paper) JPT Apr., 403
- ## F
- Failures: cement pipe linings: causes and prevention, (Tech. Paper) JPT Jan., 51
- Fairway field: case history: radioactive tracers and techniques, (Tech. Paper) JPT Oct., 1217
- Fateh field: Dubai Khazzan: pioneer of large undersea storage systems, (Tech. Paper) JPT Sept., 1065
- Fatigue: damage: analysis related to permissible horizontal motions of floating drilling vessel, SPEJ Sept., 229
- drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999
- Faults: detection: anisotropic reservoirs, JPT Oct., 1317
- Federal regulations: pollution control, (Tech. Paper) JPT Jan., 47
- Field applications: *See* Field tests
- Field case history: *See also* Field tests
- Chocolate Bayou field, Brazoria County, Texas, (Tech. Paper) JPT Apr., 411
- East Canton oil field, Ohio: waterflood evaluation, (Tech. Paper) JPT Nov., 1371
- Fairway field: radioactive tracers and techniques, (Tech. Paper) JPT Oct., 1217
- Fry in-situ combustion project, (Tech. Paper) JPT May, 551
- Kern River field, California: steam displacement, (Tech. Paper) JPT Oct., 1225
- Panhandle field, Texas: performance study of South Pampa waterflood, (Tech. Paper) JPT Apr., 393
- Rainbow-Zama area, Canada: use of uncertainty analysis in evaluating hydrocarbon pore volume, (Tech. Paper) JPT Nov., 1357
- University Block 9 field, Texas: gas-water injection secondary recovery project, (Tech. Paper) JPT Dec., 1485
- Field tests: *See also* Evaluations
- calcium sulfate scale deposition: prediction under down-hole conditions, (Tech. Paper) JPT Oct., 1299
- casing buckling: measurement in producing intervals, (Tech. Paper) JPT Mar., 255
- cathodic protection current: optimizing the distribution, (Tech. Paper) JPT July, 812
- caustic slug injection: Singleton field, (Tech. Paper) JPT Dec., 1569
- consolidation of silty sands: epoxy resin overflush process, (Tech. Paper) JPT Sept., 1103
- deep drilling aspects: Carpathian basin, Hungary, (Tech. Paper) JPT Feb., 125
- dissolved-gas flotation equipment: design and operation for treatment of oilfield produced brines, (Tech. Paper) JPT Aug., 918
- drilling optimization, (Tech. Paper) JPT Nov., 1371
- explosive fracturing: gas wells, (Tech. Paper) JPT Apr., 403
- foam injection: Siggins field, Illinois, (Tech. Paper) JPT Dec., 1499
- gas wells: low permeability and constant pressure, (Tech. Paper) JPT Sept., 1149
- injection well stimulation with micellar solutions, (Tech. Paper) JPT Dec., 1577
- miscible slug projects: current appraisal, (Tech. Paper) JPT May, 529
- neutron activation logging for silicon to aluminum ratios, (Tech. Paper) JPT Feb., 201
- NML measurements: relationship to pore size, and fluid and matrix properties, SPEJ Sept., 268
- performance compared with predicted results of numeric grid models, (Tech. Paper) JPT Nov., 1390
- polymer flooding: current appraisal, (Tech. Paper) JPT June, 675
- pressure observations and water densities in aquifers: relation to problems in gas storage, (Tech. Paper) JPT Dec., 1492
- pulse-test response: two-zone reservoir, SPEJ Sept., 245
- radioactive tracer surveying: comprehensive report, (Tech. Paper) JPT June, 661
- reservoir description determined from performance data, SPEJ Mar., 66
- reservoir limit: pressure buildup in stratified systems, JPT Apr., 503; discussion, (Forum) JPT Aug., 943
- short-time: well data interpretation in presence of skin effect and wellbore storage, JPT Jan., 97
- small-anchor: prediction of full-scale holding power, (Tech. Paper) SPEJ June, 127
- spontaneous potential logging: double-electrode method, JPT Nov., 1437
- three-rate flow: real gas transient analysis, (Tech. Paper) JPT Nov., 1347
- wellbore storage with skin effect: unsteady liquid flow, SPEJ Sept., 279
- wet underground combustion, JPT May, 605
- Filter: linear: for calculating forces produced by irregular waves, JPT Mar., 359
- Financing: *See also* Economics
- bank: evaluation problems in the Appalachian area, (Tech. Paper) JPT Oct., 1291
- Floating vessels: horizontal motions permissible: analysis of some factors, SPEJ Sept., 229
- semi-submersible: analysis of motions of drilling vessels in waves, SPEJ Sept., 311
- Flotation equipment: dissolved-gas: design and operation; treatment of oilfield produced brines, (Tech. Paper) JPT Aug., 918
- Flow properties: pulse-test response: two-zone reservoir, SPEJ Sept., 245
- Flow tests: short-term: short cut to stabilized gas well productivity, (Tech. Paper) JPT May, 537
- three-rate: real gas transient analysis, (Tech. Paper) JPT Nov., 1347

- Fluid flow: *See also* specific applications such as LPG injection, Miscible displacement, Waterflooding, etc.  
 anisotropic reservoirs: well imaging and fault detection, JPT Oct., 1317  
 drilling fluid viscosities: interpolating or extrapolating to reference temperatures, (Forum) JPT Oct., 1247  
 foam: injection test in Siggins field, Illinois, (Tech. Paper) JPT Dec., 1499  
 highest constant injection rate: predicting performance of waterfloods, (Forum) JPT Oct., 1246  
 inflow performance: relationships for damaged wells producing by solution-gas drive, (Forum) JPT Nov., 1399  
 injectivity profiles: interpretation in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
 laminar: new way to compute annular friction loss, (Forum) JPT Jan., 8  
 miscible displacement using immiscible reservoir simulators, SPEJ June, 192  
 multiphase reservoir flow equations: simultaneous solution, (Tech. Paper) SPEJ June, 99  
 polymer solution in porous media, (Tech. Paper) SPEJ June, 111  
 porous media: foams as blocking agents, (Tech. Paper) SPEJ Mar., 51  
   restricted by foam: characteristics and potential applications, SPEJ Dec., 328  
   snap-off of oil droplets; water-wet pores, SPEJ Mar., 85  
 real gas: some effects of contaminants, JPT Sept., 1157  
 steamflood process: numerical two-dimensional, three-phase model, SPEJ Dec., 405  
 three-phase relative permeability: probability model for estimating, JPT Feb., 214  
 transients: natural gas pipeline, SPEJ Dec., 357  
 two- and three-phase: relative permeability characteristics: sandstone and carbonate, SPEJ Mar., 75  
 unsteady liquid: wellbore storage and skin effect: analytical treatment, SPEJ Sept., 279  
 finite difference treatment, SPEJ Sept., 291  
 wet underground combustion: state of the art, JPT May 605
- Fluid injection: *See also* LPG injection, Miscible displacement, Slug process, Thermal recovery of oil, and Waterflooding  
 effect on performance predictions of stratified reservoir, (Tech. Paper) JPT Oct., 1239
- Fluid loss: from hydraulically induced fractures, JPT July, 882  
 lower: in new hydraulic fracturing process, (Tech. Paper) JPT Jan., 89
- Fluid properties: *See also* the specific property relationships to pore size, matrix properties, and NML measurements, SPEJ Sept., 268  
 spatially varying: method for handling in a simulation model for a fissured reservoir, (Tech. Paper) SPEJ Mar., 25
- Foams: blocking agents in porous media, (Tech. Paper) SPEJ Mar., 51  
 injection test: Siggins field, Illinois, (Tech. Paper) JPT Dec., 1499  
 porous media: characteristics and potential applications, SPEJ Dec., 328  
 sealant for leaks: model study of gas storage reservoirs, (Tech. Paper) SPEJ Mar., 9
- Forecast: 70's: SPE must alter its course, (Art.) JPT Feb., 121
- Formation damage: calcium sulfate scale deposition: prediction under down-hole conditions, (Tech. Paper) JPT Oct., 1299  
 inflow performance relationships for wells producing by solution-gas drive, (Forum) JPT Nov., 1399  
 real gas transient analysis: three-rate flow tests, (Tech. Paper) JPT Nov., 1347  
 sandstone: predicting results of acidizing, (Tech. Paper) JPT June, 693
- Formation evaluation: *See also* Core analysis, Drawdown tests, Pressure buildup and Well logging  
 pulsed neutron logging contributions, (Tech. Paper) JPT Apr., 424
- Formation fractures: centrifuge method to predict matrix-block recovery, SPEJ June, 164  
 hydraulically induced: fluid loss from, JPT July, 882  
 Panhandle field, Texas: performance study of South Pampa waterflood, (Tech. Paper) JPT Apr., 393  
 simulation model: method for handling spatially varying fluid properties, (Tech. Paper) SPEJ Mar., 25  
 Formation fracturing: effects of treatments: evaluation as related to Appalachian area bank financing, (Tech. Paper) JPT Oct., 1291  
 gas wells: explosive detonation test, (Tech. Paper) JPT Apr., 403  
   new hydraulic process, (Tech. Paper) JPT Jan., 89  
   stimulation design: effect of temperature, JPT Apr., 493  
   viscous fluids: rheology of, (Tech. Paper) JPT June, 711  
 Fractured reservoirs or fracturing: *See* Formation fractures and Formation fracturing  
 Fracturing fluids: fluid loss: hydraulically induced fractures, JPT July, 882  
 high viscosity: new hydraulic process, (Tech. Paper) JPT Jan., 89  
 viscous: rheology of, (Tech. Paper) JPT June, 711  
 Friction: loss: new way to compute for annulus, (Forum) JPT Jan., 8  
   rheology of viscous fracturing fluids, (Tech. Paper) JPT June, 711  
 Fry combustion project: *See* Illinois  
 Fuel oil: terminals: maintenance improvements on offshore installations, (Forum) JPT May, 562

## G

- Gas cap: oil layer below: development of gas saturation during solution-gas drive, SPEJ Sept., 211  
 Gas coning: numerical model, SPEJ Dec., 418  
 numerical simulation methods, SPEJ Dec., 425  
 Gas cycling: Carson Creek field, Canada: simulation of partial pressure with a compositional model, (Tech. Paper) JPT Jan., 38  
   with bottom water drive: reservoir simulation of Kaybob South field, Canada, JPT Apr., 481  
 Gas dehydration: predicting capabilities of glycol dehydrators, (Tech. Paper) JPT Aug., 925  
 Gas drive: recovery efficiency: nomograph for estimating, (Forum) JPT Mar., 277  
 Gas lift: automatic subsurface liquid removal: gas wells, (Forum) JPT Aug., 940  
 Gas reservoirs: material balances: graphical interpretations, (Forum) JPT July, 837  
   simulation of transient gas flow in porous media: transform approach, SPEJ June, 135  
   storage underground: model study of foam as a sealant for leaks, (Tech. Paper) SPEJ Mar., 9  
   water drive: reserve estimates, (Forum) JPT May, 561  
 Gas saturation: development during solution-gas drive: oil layer below a gas cap, SPEJ Sept., 211  
 Gas storage: problems: relation of pressure observations and water densities in aquifers, (Tech. Paper) JPT Dec., 1492  
   reservoirs: minimizing seasonal withdrawals, (Tech. Paper) JPT Aug., 994  
 Gas wells: automatic subsurface liquid removal, (Forum) JPT Aug., 940  
   hydraulically fractured: explosive detonation test, (Tech. Paper) JPT Apr., 403  
   low permeability: performance at constant pressure, (Tech. Paper) JPT Sept., 1149  
   real gas flow: some effects of contaminants, JPT Sept., 1157  
   stabilized productivity: short cut to, (Tech. Paper) JPT May, 537
- Gases: *See also* Natural gases  
 transient flow: simulation in porous media by a transform approach, SPEJ June, 135
- Geothermal anomalies: theory relating to overpressures, (Tech. Paper) JPT Jan., 11
- Glycols: dehydrators: predicting capabilities, (Tech. Paper) JPT Aug., 925
- Golden Spike field: *See* Canada
- Graphical analysis: gas material balances, (Forum) JPT July, 837  
 pulse-tests, JPT May, 618  
 small-anchor tests: to predict full-scale holding power, (Tech. Paper) SPEJ June, 127
- Gravity drainage: centrifuge method to predict matrix-block recovery in fractured reservoirs, SPEJ June, 164  
 model: steam-soak process, SPEJ June, 119
- Gravity segregation: *See* Gravity drainage
- Gulf Coast: *See also* Texas

circulating mud temperatures: calculation of, (Tech. Paper) JPT June, 670  
 oilfield produced brines treatment: design and operation of dissolved-gas flotation equipment, (Tech. Paper) JPT Aug., 918  
 Gulf of Mexico: wave forces: data analysis, JPT Mar., 347  
 data analysis and engineering calculation method, JPT Mar., 368  
 measured data: offshore platforms, JPT Mar., 339  
 Gypsum: scale: deposition prediction under down-hole conditions, (Tech. Paper) JPT Oct., 1299

## H

Heat: transport through a porous medium by water injection, SPEJ June, 145  
 Heat flow: reservoir: computer study of factors affecting temperature profiles, JPT Nov., 1447  
 Heat transfer: calculation of circulating mud temperatures, (Tech. Paper) JPT June, 670  
 Helium: Sunflower plant, Kansas: design and operating characteristics, (Tech. Paper) JPT Sept., 1098  
 Heptane: normal: and methane system: interfacial tension, (Forum) SPEJ Dec., 327  
 Heterogeneity: areal: how affects pulse-test results, SPEJ June, 181  
 core: effects on waterflood relative permeabilities: numerical investigation, SPEJ Dec., 381  
 Hibberd pool: *See* California  
 High pressure: Chocolate Bayou field, Brazoria County, Texas, (Tech. Paper) JPT Apr., 411  
 drilling fluids: new technique to determine equivalent viscosity, (Tech. Paper) SPEJ Mar., 33  
 theory relating to high temperatures, (Tech. Paper) JPT Jan., 11  
 History: exploitation of Alaska's natural resources, (Tech. Paper) JPT Aug., 932  
 exploration and development: deep Delaware-Val Verde basin gas play, (Tech. Paper) JPT Dec., 1515  
 production logging, (Tech. Paper) JPT Feb., 207  
 Hugoton field: stabilization factors, (Tech. Paper) JPT May, 537  
 Hungary: Carpathian basin: aspects of deep drilling, (Tech. Paper) JPT Feb., 125  
 Huntington Beach field: *See* California  
 Huntington Beach Offshore field: *See* California  
 Hydration: clays: for rock property determinations, (Tech. Paper) JPT July, 800  
 Hydraulic systems: induced fractures: fluid loss from, JPT July, 882  
 new fracturing process, (Tech. Paper) JPT Jan., 89  
 optimized in drilling, (Tech. Paper) JPT Nov., 1379  
 Hydrocarbon recovery: *See* Oil recovery  
 Hydrocarbons: Chocolate Bayou field, Brazoria County, Texas, (Tech. Paper) JPT Apr., 411  
 pore volume: use of uncertainty analysis in evaluating: Rainbow-Zama area, (Tech. Paper) JPT Nov., 1357  
 Hydrochloric acid: acidizing sandstone: predicting results, (Tech. Paper) JPT June, 693  
 matrix stimulation: design criteria, (Tech. Paper) JPT Apr., 433  
 scale removal: Virden, Manitoba, area, (Tech. Paper) JPT June, 701  
 Hydrofluoric acid: acidizing sandstone: predicting results, (Tech. Paper) JPT June, 693  
 matrix stimulation: design criteria, (Tech. Paper) JPT Apr., 433  
 Hydrogen sulfide: effects on real gas flow, JPT Sept., 1157  
 removal from waterflood injection water, (Tech. Paper) JPT Aug., 913

## I

Ice: arctic engineering, (Tech. Paper) JPT Sept., 1076  
 Illinois: Fry in-situ combustion project: performance of, (Tech. Paper) JPT May, 551  
 Siggins field: foam injection test, (Tech. Paper) JPT Dec., 1499  
 Implicit iterative procedure: simultaneous solution of multiphase reservoir flow equations, (Tech. Paper) SPEJ June, 99  
 Injection: *See also* LPG injection, Miscible displacement, Thermal recovery of oil and Waterflooding  
 alternate gas-water: case history of radioactive tracers and

techniques in Fairway field, (Tech. Paper) JPT Oct., 1217  
 caustic slug: Singleton field, (Tech. Paper) JPT Dec., 1569  
 foam: test in Siggins field, Illinois, (Tech. Paper) JPT Dec., 1499  
 gas and water: separator: miscible flood in Ante Creek Beaverhill Lake pool, Canada, (Tech. Paper) JPT Oct., 1232  
 gas-water: case history of secondary recovery project: University Block 9 field, Texas, (Tech. Paper) JPT Dec., 1485  
 hot fluids: effect of temperature on irreducible water saturation and relative permeability of unconsolidated sands, SPEJ June, 171  
 Kern River field: steam displacement, (Tech. Paper) JPT Oct., 1225  
 waste disposal: earthquakes at Rocky Mountain Arsenal, Derby, Colorado, (Tech. Paper) JPT Aug., 983  
 water: effect on sustained combustion in a porous medium, SPEJ June, 145  
 production logging used to solve problems in Huntington Beach offshore field, (Tech. Paper) JPT Sept., 1083  
 water wells: computer study of factors affecting temperature profiles, JPT Nov., 1447  
 waterflood: water: removal of hydrogen sulfide, (Tech. Paper) JPT Aug., 913  
 well stimulation with micellar solutions, (Tech. Paper) JPT Dec., 1577  
 Injection rate: epoxy resin: overflush process for consolidation of silty sands, (Tech. Paper) JPT Sept., 1103  
 highest constant value: predicting performance of waterfloods, (Forum) JPT Oct., 1246  
 Injection wells: production logging: case histories, (Tech. Paper) JPT Feb., 207  
 Injectivity: profiles: interpretation in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
 In-situ combustion: *See* Thermal recovery of oil  
 Instability: method for controlling: liquid saturation computations, (Forum) SPEJ Mar., 5  
 Interfacial tension: methane-normal heptane system, (Forum) SPEJ Dec., 327  
 Interference: testing: planning and analysis of, JPT May, 618  
 International: offshore leasing practices, (Tech. Paper) JPT Mar., 247  
 Interpolation: drilling fluid viscosities to reference temperature, (Forum) JPT Oct., 1247  
 Interpretation: injectivity profiles in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
 log: sand-shale sequences: systematic approach, JPT July, 867  
 radioactive tracer surveys: comprehensive report, (Tech. Paper) JPT June, 661  
 Small-anchor tests: predicting full-scale holding power, (Tech. Paper) SPEJ June, 127  
 temperature profiles: water injection wells: computer study of factors affecting, JPT Nov., 1447  
 thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365  
 well test data: in presence of skin effect and wellbore storage, JPT Jan., 97  
 Investments: *See also* Financing  
 decisions: probability models for petroleum, (Tech. Paper) JPT May, 543  
 Iran: Asmari formation: fissured carbonate reservoir: method for handling spatially varying fluid properties in a simulation model, (Tech. Paper) SPEJ Mar., 25  
 Iteration: strongly implicit: simultaneous solution multiphase reservoir flow equations, (Tech. Paper) SPEJ June, 99

## J

Johnson field: *See* Nebraska

## K

Kansas: Burkett unit: miscible flooding for tertiary oil recovery, (Tech. Paper) JPT May, 529  
 Sunflower helium plant: design and operating characteristics, (Tech. Paper) JPT Sept., 1098  
 Kabob Beaverhill Lake pool: *See* Canada  
 Kaybob South field: *See* Canada  
 Kern River field: *See* California



Kinkmeter: measurement of casing buckling in producing intervals, (Tech. Paper) JPT Mar., 255  
 Kozeny-Carman equation: specific surface of porous materials, (Forum) SPEJ Mar., 4

## L

Laboratory studies: bits: toothed roller cutter forces, SPEJ Mar., 57  
 cathodic protection current: optimizing the distribution, (Tech. Paper) JPT July, 812  
 caustic slug injection: synthetic cores aged with crude oil from Singleton field, (Tech. Paper) JPT Dec., 1569  
 clays: proper hydration for rock property determination, (Tech. Paper) JPT July, 800  
 consolidation of silty sands: epoxy resin overflush process, (Tech. Paper) JPT Sept., 1103  
 displacement of oil by solvent: high water saturation, (Tech. Paper) SPEJ Dec., 337  
 drilling fluids: containing chrome lignosulfonates; behavior of chromate, SPEJ June, 140  
 equivalent viscosity under high temperatures and pressures, (Tech. Paper) SPEJ Mar., 33  
 fluid loss: from hydraulically induced fractures, JPT July, 882  
 foam: as sealant for leaks in gas storage reservoirs, (Tech. Paper) SPEJ Mar., 9  
 porous media; characteristics and potential applications, SPEJ Dec., 328  
 foam injection, (Tech. Paper) JPT Dec., 1499  
 injection well stimulation with micellar solutions, (Tech. Paper) JPT Dec., 1577  
 injectivity profiles: interpretation in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
 interfacial tension: methane-normal heptane system, (Forum) SPEJ Dec., 327  
 irreducible water saturation and relative permeability: effect of temperature in unconsolidated sands, SPEJ June, 171  
 matrix stimulation with hydrochloric-hydrofluoric acid: design criteria, (Tech. Paper) JPT Apr., 433  
 matrix-block recovery: centrifuge method to predict in fractured reservoirs, SPEJ June, 164  
 miscible slug displacement: solvent and driving gas compositions, SPEJ Sept., 298  
 mobility control design: miscible-type waterfloods using micellar solutions, (Tech. Paper) JPT Feb., 141  
 paraffin deposition: refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17  
 polyacrylamide: behavior of partially hydrolyzed solutions in porous media, (Tech. Paper) JPT Feb., 148  
 polymer solution flow in porous media, (Tech. Paper) SPEJ June, 111  
 pore geometry: influence on water-oil relative permeability, (Tech. Paper) JPT Oct., 1199  
 pore size, fluid and matrix properties and NML measurements: relations between, SPEJ Sept., 268  
 recovery by steam: Penn-Grade crude oils, (Tech. Paper) JPT June, 705  
 relative permeability characteristics: two- and three-phase; sandstone and carbonate, SPEJ Mar., 75  
 sand control: stability of sand arches is key, (Tech. Paper) JPT July, 821  
 sandstone cores: effect of direct electrical current on permeability, (Tech. Paper) JPT July, 830  
 shale alteration by water adsorption, (Tech. Paper) JPT Sept., 1141  
 shale control: with balanced-activity oil-continuous muds, JPT Oct., 1309  
 snap-off of oil droplets: water-wet pores, SPEJ Mar., 85  
 solution-gas drive: development of gas saturation in an oil layer below a gas cap, SPEJ Sept., 211  
 specific surface of porous materials, (Forum) SPEJ Mar., 4  
 steamflood process: numerical two-dimensional, three-phase model, SPEJ Dec., 405  
 thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365  
 water coning: scaled model, JPT June, 771  
 wettability test for carbonate rocks, (Forum) SPEJ Mar., 3  
 Laplace equation: vertical permeability determined near a well from in-situ measurements, JPT May, 637  
 Leaks: gas storage reservoirs: model study of foam as a sealant, (Tech. Paper) SPEJ Mar., 9

underground storage: foams as blocking agents in porous media, (Tech. Paper) SPEJ Mar., 51  
 Leases: Texas offshore: bidding patterns, (Tech. Paper) JPT Mar., 283  
 Leasing practices: offshore: international, (Tech. Paper) JPT Mar., 247  
 Least squares: reservoir description determined from field performance data, SPEJ Mar., 66  
 solution: a decline curve pitfall, (Forum) JPT Apr., 441  
 Legal decisions: quality question of Texas water, (Forum) JPT Dec., 1525  
 undersea mineral development, (Tech. Paper) JPT Mar., 237  
 Licenses: petroleum engineers, (Tech. Paper) JPT Aug., 921  
 Lignosulfonates: chrome: behavior of chromate in drilling fluids, SPEJ June, 140  
 Linear programming: maximizing seasonal withdrawals: gas storage reservoirs, (Tech. Paper) JPT Aug., 994  
 model: for optimum development of multi-reservoir pipeline systems, JPT Nov., 1429  
 reservoir description determined from field performance data, SPEJ Mar., 66  
 Liquid level: determination: acoustic velocities for natural gas, JPT July, 889  
 Liquids: confined in porous solids: nuclear spin-lattice relaxation, SPEJ Sept., 237  
 gas wells: automatic subsurface removal, (Forum) JPT Aug., 940  
 recovery from natural gas, (Tech. Paper) JPT Sept., 1098  
 wellbore storage and skin effect in unsteady flow: analytical treatment, SPEJ Sept., 279  
 finite difference treatment, SPEJ Sept., 291  
 Lobstick Cardium unit: See Canada  
 Log interpretation: See Interpretation  
 Logging: See Well logging  
 Louisiana: Neale field: miscible flooding for tertiary oil recovery, (Tech. Paper) JPT May, 529  
 offshore: recent innovations in completion and workover systems, (Tech. Paper) JPT Jan., 17  
 pulsed neutron logging: contributions to improved formation evaluation, (Tech. Paper) JPT Apr., 424  
 shale control: with balanced-activity oil-continuous muds, JPT Oct., 1309  
 South Pass Blocks 24 and 27 fields: measurement of casing buckling in producing intervals, (Tech. Paper) JPT Mar., 255  
 LPG injection: miscible slug process: current appraisal of field projects, (Tech. Paper) JPT May, 529  
 solvent and driving gas compositions, SPEJ Sept., 298

## M

Mapping: geological: computerized file for directional well courses, (Tech. Paper) JPT Mar., 267  
 Marine terminals: fuel oil: maintenance improvements on offshore installations, (Forum) JPT May, 562  
 Marketing: requirements: economics of deep Delaware-Val Verde basin gas play, (Tech. Paper) JPT Dec., 1515  
 Material balance: compositional programs: data-matched equilibrium ratios; computer determination, (Tech. Paper) JPT Aug., 1007  
 gas: graphical interpretations, (Forum) JPT July, 837  
 Mathematical modeling: See Models: mathematical  
 Mathematics: curvilinear coordinate system: representation of reservoir geometry for numerical simulation, SPEJ Dec., 393  
 Matrix: oil recovery: centrifuge method to predict in fractured reservoirs, SPEJ June, 164  
 properties: relationships to pore size, fluid properties and NML measurements, SPEJ Sept., 268  
 Measurement: casing buckling in producing intervals, (Tech. Paper) JPT Mar., 255  
 forces produced by irregular waves: comparison with method for calculating, JPT Mar., 359  
 in-situ: determining net vertical permeability near a well, JPT May, 637  
 strain: clamp-on transducer for use on geologic materials, (Tech. Paper) SPEJ Mar., 41  
 wave force data: offshore platforms, JPT Mar., 339  
 Metals: clamp-on strain transducer: use on, (Tech. Paper) SPEJ Mar., 41  
 Methane: normal heptane system: interfacial tension, (Forum) SPEJ Dec., 327  
 Micellar solutions: injection well stimulation, (Tech. Paper) JPT Dec., 1577

mobility control design for miscible-type waterfloods, (Tech. Paper) JPT Feb., 141

Minerals: content: criterion for acid stimulation, (Tech. Paper) JPT Apr., 433

development: undersea legal problems, (Tech. Paper) JPT Mar., 237

Miscible displacement: alternate gas-water injection: case history of radioactive tracers and techniques in Fairway field, (Tech. Paper) JPT Oct., 1217

gas-water injection: case history of secondary recovery project: University Block 9 field, Texas, (Tech. Paper) JPT Dec., 1485

oil by solvent: high water saturation, (Tech. Paper) SPEJ Dec., 337

propane slug pilot: performance in a watered-out sand; South Ward field, Texas, (Tech. Paper) JPT Oct., 1209

rigorous calculation using immiscible reservoir simulators, SPEJ June, 192

separator gas and water injection used: Ante Creek Beaverhill Lake pool, Canada, (Tech. Paper) JPT Oct., 1232

slug field projects: current appraisal, (Tech. Paper) JPT May, 529

slug process: solvent and driving gas compositions, SPEJ Sept., 298

waterfloods using micellar solutions: mobility control design, (Tech. Paper) JPT Feb., 141

Mitsue Gilwood pool: *See* Canada

Mobility: control: design for miscible-type waterfloods using micellar solutions, (Tech. Paper) JPT Feb., 141

reduction: behavior of partially hydrolyzed polyacrylamide solutions in porous media, (Tech. Paper) JPT Feb., 148

Mobility ratio: performance predictions: effect of reservoir description, (Tech. Paper) JPT Oct., 1239

polymer flooding, (Tech. Paper) JPT June, 675

Models: block: how areal heterogeneities affect pulse-test results, SPEJ June, 181

compositional: simulation of a partial pressure maintenance project, Carson Creek field, Canada, (Tech. Paper) JPT Jan., 38

Higgins-Leighton: injection well stimulation with micellar solutions, (Tech. Paper) JPT Dec., 1577

mathematical: block representation of reservoir geometry for numerical simulation, SPEJ Dec., 393

calculation of circulating mud temperatures, (Tech. Paper) JPT June, 670

coning model, SPEJ Dec., 425

gravity drainage: steam-soak process, SPEJ June, 119

linear programming: optimum development of multi-reservoir pipeline systems, JPT Nov., 1429

multiphase, multidimensional simulation of coning using implicit production terms, SPEJ Sept., 257

oil reservoirs: study of gravitational effects and production rate on solution-gas drive performance, JPT May, 625

reservoir limit testing: pressure buildup in stratified systems, JPT Apr., 503

simulation of transient gas flow in porous media, SPEJ June, 135

simulation of water and gas coning, SPEJ Dec., steamflood process; two-dimensional, three-phase, SPEJ Dec., 405

steam-soak: depletion-type reservoirs, JPT June, 757

two-zone, pulse-test response of a reservoir, SPEJ Sept., 245

wave forces: data analysis and engineering calculation method, JPT Mar., 368

well imaging and fault detection in anisotropic reservoirs, JPT Oct., 1317

numeric: gas-water injection secondary recovery: University Block 9 field, Texas, (Tech. Paper) JPT Dec., 1485

predicted results compared with actual field performance, (Tech. Paper) JPT Nov., 1390

probability: estimating three-phase relative permeability, JPT Feb., 214

for petroleum investment decisions, (Tech. Paper) JPT May, 543

random-walk: liquids confined in porous solids: nuclear spin-lattice relaxation, SPEJ Sept., 237

sand and shale: log analysis of sand-shale sequences, JPT July, 867

sandstone: gas storage reservoirs: foam as a sealant for leaks, (Tech. Paper) SPEJ Mar., 9

scaled: design of single-point moorings; application of probability, SPEJ Sept., 219

water coning study, JPT June, 771

simulation: fissured reservoir; method for handling spatially varying fluid properties, (Tech. Paper) SPEJ Mar., 25

Kaybob South: gas cycling project with bottom water drive, JPT Apr., 481

theoretical: analysis of motions of semi-submersible drilling vessels in waves, SPEJ Sept., 311

for predicting fluid loss from hydraulically induced fractures, JPT July, 882

relations between pore size, fluid and matrix properties, and NML measurements, SPEJ Sept., 268

transparent: solution-gas drive: development of gas-saturation in oil layer below a gas cap, SPEJ Sept., 211

Montana: Elk Basin field: analysis of an operating telemetering system, (Tech. Paper) JPT Apr., 397

Monterey Bay marine terminal: *See* California

Moorings: maintenance improvements on offshore fuel oil terminals, (Forum) JPT May, 562

single-point: design: application of probability, SPEJ Sept., 219

Mud circulation: temperature calculations, (Tech. Paper) JPT June, 670

## N

National Council of Engineering Examiners: professional registration: petroleum engineers, (Tech. Paper) JPT Aug., 921

professionalism: steps toward enhancing, (Forum) JPT Apr., 442

National Society of Professional Engineers: professional registration: petroleum engineers, (Tech. Paper) JPT Aug., 921

Natural gas: *See also* Gases

acoustic velocity: determination of, JPT July, 889

glycol dehydrators: predicting capabilities, (Tech. Paper) JPT Aug., 925

pipeline transients, SPEJ Dec., 357

price, (Forum) JPT Aug., 937

real gas flow: some effects of contaminants, JPT Sept., 1157

reserves and economics: deep Delaware-Val Verde basin, (Tech. Paper) JPT Dec., 1515

storage reservoirs: maximizing seasonal withdrawal, (Tech. Paper) JPT Aug., 994

underground storage: forms as blocking agents in porous media, (Tech. Paper) SPEJ Mar., 51

Natural gas liquids: cryogenic recovery process: design and operating characteristics: Sunflower plant, Kansas, (Tech. Paper) JPT Sept., 1098

Natural resources: Alaska: new approach to development, (Tech. Paper) JPT Aug., 932

N. E. Thompsonville field: *See* Texas

Neale field: *See* Louisiana

Nebraska: Johnson field: miscible flooding for tertiary oil recovery, (Tech. Paper) JPT May, 529

Netherlands: Schoonebeek project: wet underground combustion, JPT May, 605

Neutron logging: pulsed: contributions to improved formation evaluation, (Tech. Paper) JPT Apr., 424

New Mexico: Delaware-Val Verde basin: reserves and economics of deep gas play, (Tech. Paper) JPT Dec., 1515

New York: recovery of Penn-Grade crude oils by steam, (Tech. Paper) JPT June, 705

Nitrogen: effects on real gas flow, JPT Sept., 1157

Nomograph: recovery efficiency: estimating in depletion drive and water drive reservoirs, (Forum) JPT Mar., 277

Non-Newtonian systems: laminar flow: new way to compute annular friction loss, (Forum) JPT Jan., 8

polymer solution flow in porous media, (Tech. Paper) SPEJ June, 111

Nuclear logging: activation logging for silicon to aluminum ratios, (Tech. Paper) JPT Feb., 201

thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365

Nuclear magnetic resonance: alcohol flooding tests: technique for analysis of samples, (Forum) SPEJ Mar., 7

Nuclear magnetism logging: liquids confined in porous solids: nuclear spin-lattice relaxation, SPEJ Sept., 237

relations between pore size, fluid and matrix properties, and NML measurements, SPEJ Sept., 268

Numerical solutions: acoustic velocities: determination for natural gas, JPT July, 889  
 analysis of motions: semisubmersible drilling vessels in waves, SPEJ Sept., 311  
 anchor-line design: vessel motion control, (Tech. Paper) JPT June, 685  
 annular friction loss: new way to compute, (Forum) JPT Jan., 8  
 casing buckling in producing intervals, (Tech. Paper) JPT Mar., 255  
 coning model, SPEJ Dec., 418  
 deflection of centralized casing: effect of axial tension, (Forum) JPT Jan., 7  
 displacement of oil by solvent at high water saturation, (Tech. Paper) SPEJ Dec., 337  
 forces produced by irregular waves, JPT Mar., 359  
 gas storage problems: relation of pressure observations and water densities in aquifers, (Tech. Paper) JPT Dec., 1492  
 gravitational effects and production rate: solution-gas drive performance of oil reservoirs, JPT May, 625  
 gravity drainage model: steam-soak process, SPEJ June, 119  
 least-squares: a decline curve pitfall, (Forum) JPT Apr., 441  
 liquid saturation computations: method for controlling instability, (Forum) SPEJ Mar., 5  
 longitudinal vibrations: oilwell drill string: effect of shock sub, (Tech. Paper) SPEJ Dec., 349  
 maximizing seasonal withdrawals: gas storage reservoirs, (Tech. Paper) JPT Aug., 994  
 miscible displacement using immiscible reservoir simulators, SPEJ June, 192  
 multiphase reservoir flow equations: simultaneous solution, (Tech. Paper) SPEJ June, 99  
 multi-reservoir pipeline systems: optimum development by linear programming model, JPT Nov., 1429  
 pulse-tests, JPT May, 618  
 how areal heterogeneities affect results, SPEJ June, 181  
 real gas transient analysis: three-rate flow tests, (Tech. Paper) JPT Nov., 1347  
 relations between pore size, fluid and matrix properties, and NML measurements, SPEJ Sept., 268  
 reservoir limit testing: pressure buildup in stratified systems, JPT Apr., 503; discussion, (Forum) JPT Aug., 943  
 sandstone acidizing: predicting results, (Tech. Paper) JPT June, 693  
 shale oil recovery by in-situ retorting, (Tech. Paper) JPT Dec., 1520  
 simulation: coning; using implicit production terms, SPEJ Sept., 257  
 reservoir geometry, SPEJ Dec., 393  
 spontaneous potential logging: double-electrode method, JPT Nov., 1437  
 steamflood process: two-dimensional, three-phase model, SPEJ Dec., 405  
 stimulation design: effect of temperature, JPT Apr., 493  
 transform approach: simulation of transient gas flow in porous media, SPEJ June, 135  
 transients: natural gas pipeline, SPEJ Dec., 357  
 vertical permeability: determining near a well from in-situ measurements, JPT May, 637  
 water and gas coning: methods for simulation, SPEJ Dec., 425  
 waterflood relative permeabilities: effects of core heterogeneities, SPEJ Dec., 381  
 wave force data analysis, JPT Mar., 347  
 wellbore storage and skin effect in unsteady liquid flow: finite difference treatment, SPEJ Sept., 291

## O

Offshore: leasing practices: international: comparison of systems, (Tech. Paper) JPT Mar., 247  
 structures: analysis of wave force data, JPT Mar., 347  
 calculating forces produced by irregular waves, JPT Mar., 359  
 measured wave force data, JPT Mar., 339  
 Texas: bidding patterns, (Tech. Paper) JPT Mar., 283  
 undersea storage: Dubai Khazzan: pioneer of large systems, (Tech. Paper) JPT Sept., 1065  
 wave forces: data analysis and engineering calculation method, JPT Mar., 368  
 Offshore drilling: floating vessel: analysis of some factors related to permissible horizontal motions, SPEJ Sept., 229

Santa Barbara Channel, California: in 1,300 feet of water, (Tech. Paper) JPT Jan., 27  
 semisubmersible vessels: analysis of motions in waves, SPEJ Sept., 311  
 Offshore operations: completion and workover systems: recent innovations, (Tech. Paper) JPT Jan., 17  
 completions: selection criteria for subsurface safety equipment, (Tech. Paper) JPT July, 793  
 fuel oil terminals: maintenance improvements, (Forum) JPT May, 562  
 Huntington Beach field: production logging as used to solve water injection problems, (Tech. Paper) JPT Sept., 1083  
 legal problems in mineral development, (Tech. Paper) JPT Mar., 237  
 single-point moorings: application of probability to design, SPEJ Sept., 219  
 well servicing: pump-down techniques, (Tech. Paper) JPT Feb., 161  
 Ohio: East Canton oil field: evaluation of waterflood, (Tech. Paper) JPT Nov., 1371  
 Oil: See also Petroleum  
 droplets: snap-off in water-wet pores, SPEJ Mar., 85  
 layer below a gas cap: development of gas saturation during solution-gas drive, SPEJ Sept., 211  
 pollution: control efforts in Santa Barbara, California, (Tech. Paper) JPT Dec., 1511  
 Oil fields: See also name of specific fields  
 produced brines treatment: design and operation of dissolved-gas flotation equipment, (Tech. Paper) JPT Aug., 918  
 waterflood evaluation: East Canton field, Ohio, (Tech. Paper) JPT Nov., 1371  
 Oil industry: petroleum property values: effect of 1969 Tax Reform Act, (Tech. Paper) JPT Dec., 1475  
 Oil recovery: from shale by in-situ retorting: pilot study, (Tech. Paper) JPT Dec., 1520  
 matrix-block: centrifuge method to predict in fractured reservoirs, SPEJ June, 164  
 Penn-Grade crude oils by steam, (Tech. Paper) JPT June, 705  
 performance of the Fry in-situ combustion project, (Tech. Paper) JPT May, 551  
 waterfloods: predicting performance at highest constant injection rate, (Forum) JPT Oct., 1246  
 Oil reservoirs: solution-gas drive performance: numerical model study of gravitational effects and production rate, JPT May, 625  
 Oil saturation: residual: recovery of Penn-Grade crude oils by steam, (Tech. Paper) JPT June, 705  
 Oil shales: recovery by in-situ retorting: pilot study, (Tech. Paper) JPT Dec., 1520  
 Oil wells: drill string: mathematical analysis of effect of shock sub on longitudinal vibrations, (Tech. Paper) SPEJ Dec., 349  
 Oklahoma: Anadarko basin: stabilization factors for gas wells using correlations, (Tech. Paper) JPT May, 537  
 Wynona field: explosive detonation tested in hydraulically fractured gas well, (Tech. Paper) JPT Apr., 403  
 Operations research: linear programming model: for optimum development of multi-reservoir pipeline systems, JPT Nov., 1429  
 Optimization: drilling, (Tech. Paper) JPT Nov., 1379  
 Optimizing technique: for distribution of cathodic protection current, (Tech. Paper) JPT July, 812  
 multi-reservoir pipeline systems development: linear programming model, JPT Nov., 1429  
 Organization of American States: legal problems in undersea mineral development, (Tech. Paper) JPT Mar., 237

## P

Panhandle field: See Texas  
 Paraffin: deposition: from refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17  
 well servicing by pump-down techniques, (Tech. Paper) JPT Feb., 161  
 Pendant-drop technique: interfacial tension values: methane-normal heptane system, (Forum) SPEJ Dec., 327  
 Penetration: bits: correlation with roller cutter forces, SPEJ Mar., 57  
 Pennsylvania: recovery of Penn-Grade crude oils by steam, (Tech. Paper) JPT June, 705  
 Percentage depletion: effects of 1969 Tax Reform Act, (Tech. Paper) JPT Dec., 1475



- Performance predictions: Ante Creek Beaverhill Lake pool: miscible flood using separator gas and water injection, (Tech. Paper) JPT Oct., 1232
- data-matched equilibrium ratios: computer determination, (Tech. Paper) JPT Aug., 1007
- effect of reservoir description, (Tech. Paper) JPT Oct., 1239
- Fry in-situ combustion project (Tech. Paper) JPT May, 551
- gas wells: low permeability and constant pressure, (Tech. Paper) JPT Sept., 1149
- Kaybob South field, Canada: gas cycling project with bottom-water drive, JPT Apr., 481
- numeric grid models compared with actual field performance, (Tech. Paper) JPT Nov., 1390
- solution-gas drive oil reservoirs: numerical model study of gravitational effects and production rate, JPT May, 625
- waterfloods at highest constant injection rate, (Forum) JPT Oct., 1246
- Permafrost: arctic engineering, (Tech. Paper) JPT Sept., 1076
- Permeability: anisotropy: well imaging and fault detection in reservoirs, JPT Oct., 1317
- determinations: proper hydration of clays, (Tech. Paper) JPT July, 800
- effective: real gas transient analysis: three-rate flow tests, (Tech. Paper) JPT Nov., 1347
- fault planes: Chocolate Bayou field, Texas, (Forum) JPT May, 566
- low: gas well performance at constant pressure, (Tech. Paper) JPT Sept., 1149
- reduction: behavior of partially hydrolyzed polyacrylamide solutions in porous media, (Tech. Paper) JPT Feb., 148
- relative: effect of temperature in unconsolidated sands, SPEJ June, 171
- probability model for estimating three-phase data, JPT Feb., 214
- two- and three-phase characteristics: sandstone and carbonate, SPEJ Mar., 75
- waterfloods: numerical investigation of effects of core heterogeneities, SPEJ Dec., 381
- water-oil: influence of pore geometry, (Tech. Paper) JPT Oct., 1199
- sandstone cores: effect of direct electrical current, (Tech. Paper) JPT July, 830
- stratified: effect on performance predictions, (Tech. Paper) JPT Oct., 1239
- pressure buildup in reservoir limit testing, JPT Apr., 503; discussion, (Forum) JPT Aug., 943
- reservoir limit testing, (Forum) JPT Aug., 943
- vertical: determining near a well from in-situ measurements, JPT May, 637
- Petroleum: *See also* Oil
- property values: effects of 1969 Tax Reform Act, (Tech. Paper) JPT Dec., 1475
- Petroleum economics: *See* Economics
- Petroleum engineer: professional registration, (Tech. Paper) JPT Aug., 921
- Petroleum industry: *See* Oil industry
- Phase behavior: data-match equilibrium ratios: computer determination, (Tech. Paper) JPT Aug., 1007
- Photography: photomicrographs: pore geometry influence on water-oil relative permeability, (Tech. Paper) JPT Oct., 1199
- Physical properties: reservoir: determining from field performance data, SPEJ Mar., 66
- Pilot study: current appraisal of field miscible slug projects, (Tech. Paper) JPT May, 529
- propane slug: performance in watered-out sand; South Ward field, Texas, (Tech. Paper) JPT Oct., 1209
- shale oil recovery by in-situ retorting, (Tech. Paper) JPT Dec., 1520
- Singleton field: caustic slug injection after waterflooding, (Tech. Paper) JPT Dec., 1569
- Pipe: cement linings: causes and prevention of failures, (Tech. Paper) JPT Jan., 51
- Pipelines: multi-reservoir systems: linear programming model for optimum development, JPT Nov., 1429
- natural gas: transients, SPEJ Dec., 357
- Plant: Sunflower helium: design and operating characteristics, (Tech. Paper) JPT Sept., 1098
- Platforms: fixed: recent innovations in offshore multiwell completion and workover systems, (Tech. Paper) JPT Jan., 17
- offshore: measured wave force data, JPT Mar., 339
- Polarography: analysis: behavior of chromate in drilling fluids containing chrome lignosulfonate, SPEJ June, 140
- Pollution: and production and professional responsibility will dominate next three decades, (Art.) JPT Apr., 448
- arctic engineering, (Tech. Paper) JPT Sept., 1076
- control: men, money, and responsibility, (Tech. Paper) JPT Jan., 47
- oil: control efforts in Santa Barbara, California, (Tech. Paper) JPT Dec., 1511
- Polyacrylamide: flow in porous media, (Tech. Paper) SPEJ June, 111
- partially hydrolyzed solutions: behavior in porous media, (Tech. Paper) JPT Feb., 148
- Polymers: experiments: performance study of South Pampa waterflood, (Tech. Paper) JPT Apr., 393
- flooding: current appraisal, (Tech. Paper) JPT June, 675
- polyacrylamide: behavior of partially hydrolyzed solutions in porous media, (Tech. Paper) JPT Feb., 148
- solution flow in porous media, (Tech. Paper) SPEJ June, 111
- Polysaccharide: flow in porous media, (Tech. Paper) SPEJ June, 111
- Pore size distribution: porous solids: nuclear spin-lattice relaxation of liquids confined therein, SPEJ Sept., 237
- Pore structure: doughnut hole: snap-off of oil droplets: water-wet pores, SPEJ Mar., 85
- geometry: influence on water-oil relative permeability, (Tech. Paper) JPT Oct., 1199
- Pore volume: hydrocarbon: use of uncertainty analysis in evaluating in Rainbow-Zama area, (Tech. Paper) JPT Nov., 1357
- Porosity: determinations: proper hydration of clays, (Tech. Paper) JPT July, 800
- Porous media: *See also* Reservoir rocks
- confined liquids: nuclear spin-lattice relaxation, SPEJ Sept., 237
- effect of water injection on sustained combustion in a porous medium, SPEJ June, 145
- foams: as blocking agents, (Tech. Paper) SPEJ Mar., 51
- characteristics and potential applications, SPEJ Dec., 328
- polyacrylamide: behavior of partially hydrolyzed solutions, (Tech. Paper) JPT Feb., 148
- polymer solution flow, (Tech. Paper) SPEJ June, 111
- simulation of transient gas flow: transform approach, SPEJ June, 135
- specific surface, (Forum) SPEJ Mar., 4
- Power: holding: small anchor tests to predict full-scale results, (Tech. Paper) SPEJ June, 127
- Pozzolan: cement: pipe linings, causes and prevention of failures, (Tech. Paper) JPT Jan., 51
- Pressure behavior: Chocolate Bayou field, Brazoria County, Texas, (Tech. Paper) JPT Apr., 411
- constant pressure: low-permeability gas well performance, (Tech. Paper) JPT Sept., 1149
- observations in aquifers: relation to problems in gas storage, (Tech. Paper) JPT Dec., 1492
- Pressure buildup: reservoir limit testing of stratified systems, JPT Apr., 503; discussion, (Forum) JPT Aug., 943
- Pressure distribution: wellbore effect: net vertical permeability determined from in-situ measurements, JPT May, 637
- Pressure drawdown: high-pressure gas reservoir: limits testing, (Forum) JPT Aug., 943
- Pressure maintenance: *See also* LPG injection, Miscible displacement, and Waterflooding
- gas-water injection: case history of secondary recovery project: University Block 9 field, Texas, (Tech. Paper) JPT Dec., 1485
- partial: simulation of a compositional model, Carson Creek field, Canada, (Tech. Paper) JPT Jan., 38
- Probability: application to design of single-point moorings, SPEJ Sept., 219
- models: for petroleum investment decisions, (Tech. Paper) JPT May, 543
- Processing: computerized file: directional well courses, (Tech. Paper) JPT Mar., 267
- Production: and pollution and professional responsibility will dominate next three decades, (Art.) JPT Apr., 448
- efficiency: pulsed neutron logging contributions, (Tech. Paper) JPT Apr., 424

implicit terms: use in numerical simulation of coning, SPEJ Sept., 357  
 natural gas, (Forum) JPT Aug., 937  
 payments: effects of 1969 Tax Reform Act, (Tech. Paper) JPT Dec., 1475  
 performance: steam-soak process; gravity drainage model, SPEJ June, 119  
 rate: numerical model study of solution-gas drive oil reservoirs, JPT May, 625  
 sand: stability of sand arches is key to control, (Tech. Paper) JPT July, 821  
 Production logging: case histories, (Tech. Paper) JPT Feb., 207  
 used to solve water injection problems: Huntington Beach offshore field, (Tech. Paper) JPT Sept., 1083  
 Production operations: *See also* the specific operation computer control system: planning and implementing, (Tech. Paper) JPT Feb., 134  
 Professional societies: SPE: must alter its course in the 70's, (Art.) JPT Feb., 121  
 Professionalism: and production and pollution will dominate next three decades, (Art.) JPT Apr., 448  
 registration: another step toward enhancing, (Forum) JPT Apr., 442  
 petroleum engineers, (Tech. Paper) JPT Aug., 921  
 Propane slug: pilot performance: watered-out sand in South Ward field, Texas, (Tech. Paper) JPT Oct., 1209  
 Properties: petroleum: effects of 1969 Tax Reform Act on values, (Tech. Paper) JPT Dec., 1475  
 Pulse-testing: areal heterogeneities: how they affect results, SPEJ June, 181  
 planning and analysis, JPT May, 618  
 response of two-zone reservoir, SPEJ Sept., 245  
 Pumps: submersible, (Tech. Paper) JPT Dec., 1480

## Q

Texas water, (Forum) JPT Dec., 1525

## R

Radioactivity: tracer surveying: comprehensive report, (Tech. Paper) JPT June, 661  
 tracers and techniques: Fairway field case history, (Tech. Paper) JPT Oct., 1217  
 Rainbow Keg River pools: *See* Canada  
 Rainbow-Zama area: *See* Canada  
 Recovery: efficiency: nomograph for estimating in depletion drive and water drive reservoirs, (Forum) JPT Mar., 277  
 Recovery methods: *See also* Oil recovery, Secondary recovery, Tertiary recovery and Thermal recovery of oil  
 steam: Penn-Grade crude oils, (Tech. Paper) JPT June, 705  
 Registration: professional: petroleum engineer, (Tech. Paper) JPT Aug., 921  
 Regulatory practices: international offshore leasing, (Tech. Paper) JPT Mar., 247  
 pollution control, (Tech. Paper) JPT Jan., 47  
 Relative permeability: *See* Permeability: relative  
 Reserves: estimation: low-permeability gas well performance at constant pressure, JPT Sept., 1149  
 evaluating for bank financing: problems related to Appalachian area, (Tech. Paper) JPT Oct., 1291  
 gas play: deep Delaware-Val Verde basin, (Tech. Paper) JPT Dec., 1515  
 natural gas, (Forum) JPT Aug., 937  
 water-drive reservoirs; estimates of, (Forum) JPT May, 561  
 Reservoir analysis: *See also* Performance predictions  
 coning: gas and water; methods for numerical simulation, SPEJ Dec., 425  
 numerical model, SPEJ Dec., 418  
 effect of reservoir description on performance predictions, (Tech. Paper) JPT Oct., 1239  
 simulation of transient gas flow: transform approach, SPEJ June, 135  
 uncertainty analysis: use in evaluating hydrocarbon pore volume; Rainbow-Zama area, Canada, (Tech. Paper) JPT Nov., 1357  
 water coning: scaled model study, JPT June, 771  
 waterflood evaluation: East Canton oil field, Ohio, (Tech. Paper) JPT Nov., 1371  
 Reservoir characteristics: determined from field performance data, SPEJ Mar., 66

geometry: representation for numerical simulation, SPEJ Dec., 393  
 Reservoir engineering: *See* Reservoir mechanics  
 Reservoir limit test: Hurst and Kazemi discuss, (Forum) JPT Aug., 943  
 stratified systems: pressure buildup, JPT Apr., 503; discussion, (Forum) JPT Aug., 943  
 Reservoir mechanics: miscible flood using separator gas and water injection: Ante Creek Beaverhill Lake pool, Canada, (Tech. Paper) JPT Oct., 1232  
 numerical model study of gravitational effects and production rate on solution gas drive performance of oil reservoirs, JPT May, 625  
 Reservoir pressure: *See* Pressure behavior  
 Reservoir rocks: *See also* Cores and Porous media  
 bit penetration correlated with roller cutter forces, SPEJ Mar., 57  
 clamp-on strain transducer: use on, (Tech. Paper) SPEJ Mar., 41  
 Reservoir simulation: *See also* Models  
 design and prediction of polymer floods, (Tech. Paper) JPT June, 675  
 effects of core heterogeneities on waterflood relative permeabilities, SPEJ Dec., 381  
 gas cycling project with bottom-water drive, JPT Apr., 481  
 multiphase flow equations: simultaneous solution, (Tech. Paper) SPEJ June, 99  
 numeric grid models: predicted results compared with actual field performance, (Tech. Paper) JPT Nov., 1390  
 study of gravitational effects and production rate on solution gas drive performance of oil reservoirs, JPT May, 625  
 numerical: coning model, SPEJ Dec., 418  
 representation of reservoir geometry, SPEJ Dec., 393  
 reservoir description from field performance data, SPEJ Mar., 66  
 rigorous calculation of miscible displacement using immiscible simulators, SPEJ June, 192  
 steamflood process: numerical two-dimensional, three-phase model, SPEJ Dec., 405  
 stratified reservoir: effect on performance predictions, (Tech. Paper) JPT Oct., 1239  
 water and gas coning: numerical methods, SPEJ Dec., 425  
 Reservoir stimulation: matrix: hydrochloric-hydrofluoric acid; design criteria, (Tech. Paper) JPT Apr., 433  
 pattern: performance study of the South Pampa waterflood, (Tech. Paper) JPT Apr., 393  
 steam-soak model: depletion type reservoirs, JPT June, 757  
 Reservoirs: *See also* specific names and type, such as, Bottom-water drive, Gas drive, Gravity drainage, and Solution-gas drive and also specific names  
 depletion-type: steam-soak model, JPT June, 757  
 fissured: simulation model; method for handling spatially varying fluid properties, (Tech. Paper) SPEJ Mar., 25  
 gas storage: maximizing seasonal withdrawals, (Tech. Paper) JPT Aug., 994  
 two-zone: pulse-test response, SPEJ Sept., 245  
 Response functions: planning and analysis of pulse-tests, JPT May, 618  
 Rheology: viscous fracturing fluids, (Tech. Paper) JPT June, 711  
 Rock mechanics: shale control: with balanced-activity oil-continuous muds, JPT Oct., 1309  
 Rock properties: determinations: proper hydration of clays for, (Tech. Paper) JPT July, 800  
 pore geometry: influence on water-oil relative permeability, (Tech. Paper) JPT Oct., 1199  
 Rocks: *See* Reservoir rocks  
 Rocky Mountain Arsenal: *See* Colorado

## S

Safety: equipment: selection criteria for subsurface offshore completions, (Tech. Paper) JPT July, 793  
 Salinity: *See* Salt content  
 Salt content: Chocolate Bayou field, Brazoria County, Texas, (Tech. Paper) JPT Apr., 411  
 (Forum) JPT May, 566  
 Salts: water: question of quality in Texas, (Forum) JPT Dec., 1525  
 Samples: from alcohol flooding tests: NMR technique analysis, (Forum) SPEJ Mar., 7

- Sand: arches: stability is key to sand control, (Tech. Paper) JPT July, 821  
 cement: pipe linings, causes and prevention of failures, (Tech. Paper) JPT Jan., 51  
 shale sequences: systematic approach to log analysis, JPT July, 867  
 silty: consolidation with an epoxy resin overflush process, (Tech. Paper) JPT Sept., 1103  
 unconsolidated: effect of temperature on irreducible water saturation and relative permeability, SPEJ June, 171  
 watered-out: performance of a propane slug pilot in South Ward field, Texas, (Tech. Paper) JPT Oct., 1209  
 well servicing by pump-down techniques, (Tech. Paper) JPT Feb., 161  
 Sand control: economic: recent innovations in offshore systems, (Tech. Paper) JPT Jan., 17  
 stability of sand arches is key, (Tech. Paper) JPT July, 821  
 Sandstone: acidizing, (Forum) JPT June, 720  
 predicting results, (Tech. Paper) JPT June, 693  
 cores: effect of direct electrical current on permeability, (Tech. Paper) JPT July, 830  
 relative permeability characteristics: two- and three-phase, SPEJ Mar., 75  
 Santa Barbara: *See* California  
 Saturation: around well: stable in numerical coning model, SPEJ Dec., 418  
 liquid: method for controlling instability of computations, (Forum) SPEJ Mar., 5  
 Scale: calcium sulfate: prediction of deposition under down-hole conditions, (Tech. Paper) JPT Oct., 1299  
 removal: Virden, Manitoba, area, (Tech. Paper) JPT June, 701  
 Sealing: water coning: model study, JPT June, 771  
 Schoonebeek project: *See* Netherlands  
 Sealing: gas storage reservoirs: model study of foam as sealant for leaks, (Tech. Paper) SPEJ Mar., 9  
 Secondary recovery: *See also* LPG injection, Miscible displacement, Thermal recovery of oil and Water-flooding  
 foam in porous media: characteristics and potential applications, SPEJ Dec., 328  
 gas-water injection: case history of University Block 9 field, Texas, (Tech. Paper) JPT Dec., 1485  
 injection profiles: interpretation in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
 polymer solution flow in porous media, (Tech. Paper) SPEJ June, 111  
 Self potential: logging: double-electrode method, JPT Nov., 1437  
 Semisubmersibles: drilling vessels: analysis of motions in waves, SPEJ Sept., 311  
 Shale: alteration by water adsorption, (Tech. Paper) JPT Sept., 1141  
 control: with balanced-activity oil-continuous muds, JPT Oct., 1309  
 sand sequences: systematic approach to log analysis, JPT July, 867  
 Shale oils: *See* Oil shales  
 Shear strength: sand: stability of sand arches; key to sand control, (Tech. Paper) JPT July, 821  
 Siggins field: *See* Illinois  
 Silicon: aluminium ratios: determination by neutron activation logging, (Tech. Paper) JPT Feb., 201  
 Simulation: compositional model: partial pressure maintenance gas cycling project, Carson Creek field, Canada, (Tech. Paper) JPT Jan., 38  
 linear programming model: for optimum development of multi-reservoir pipeline systems, JPT Nov., 1429  
 model: fissured reservoir; method for handling spatially varying fluid properties, (Tech. Paper) SPEJ Mar., 25  
 Monte Carlo: evaluating hydrocarbon pore volume in Rainbow-Zama area, Canada, (Tech. Paper) JPT Nov., 1357  
 numerical: computer determination of data-matched equilibrium ratios, (Tech. Paper) JPT Aug., 1007  
 coning using implicit production terms, SPEJ Sept., 257  
 transient gas flow in porous media: transform approach, SPEJ June, 135  
 Singleton field: caustic slug injection, (Tech. Paper) JPT Dec., 1569  
 Skin effect: gas well productivity, (Tech. Paper) JPT May, 537  
 unsteady liquid flow: analytical treatment, SPEJ Sept., 279  
 finite difference treatment, SPEJ Sept., 291  
 Slippage: rheology of viscous fracturing fluids, (Tech. Paper) JPT June, 711  
 Slug process: *See also* Miscible displacement and LPG injection  
 caustic injection: Singleton field, (Tech. Paper) JPT Dec., 1569  
 micellar solutions: mobility control design for miscible-type waterfloods, (Tech. Paper) JPT Feb., 141  
 miscible: current appraisal of field projects, (Tech. Paper) JPT May, 529  
 solvent and driving gas compositions for, SPEJ Sept., 298  
 Society of Petroleum Engineers: course must be altered in the 70's, (Art.) JPT Feb., 121  
 professional registration and the petroleum engineer, (Tech. Paper) JPT Aug., 921  
 Solution-gas drive: gas saturation development: oil layer below a gas cap, SPEJ Sept., 211  
 inflow performance relationships for damaged wells, (Forum) JPT Nov., 1399  
 oil reservoirs: numerical model study of gravitational effects and production rate, JPT May, 625  
 Solvents: refined wax system: paraffin deposition, (Tech. Paper) SPEJ Mar., 17  
 water, simultaneous injection: displacement of oil at high water saturation, (Tech. Paper) SPEJ Dec., 337  
 South Pass Blocks 24 and 27 fields: *See* Louisiana  
 South Ward field: *See* Texas  
 SP log: double-electrode method of recording, JPT Nov., 1437  
 SPE: *See* Society of Petroleum Engineers  
 Specifications: glycol dehydrators: predicting capabilities, (Tech. Paper) JPT Aug., 925  
 Spontaneous potential: *See* Self potential and SP log  
 Spraberry Driver unit: *See* Texas  
 Stability: sand arches: key to sand control, (Tech. Paper) JPT July, 821  
 Stabilization mechanism: gas well productivity: (Tech. Paper) JPT May, 537  
 Statutes: *See* Legal decisions  
 Steam flooding or injection: *See* Thermal recovery of oil  
 Stimulation: *See* Reservoir and Well stimulation, or the specific process  
 Storage: underground: foams as blocking agents in porous media, (Tech. Paper) SPEJ Mar., 51  
 gas reservoirs: model study of foam as a sealant for leaks, (Tech. Paper) SPEJ Mar., 9  
 values: obtained from pulse-tests; how areal heterogeneities affect, SPEJ June, 181  
 wellbore: short-time well test data interpretation, JPT Jan., 97  
 with skin effect in unsteady liquid flow; analytical treatment, SPEJ Sept., 279  
 with skin effect in unsteady liquid flow; finite difference treatment, SPEJ Sept., 291  
 Storage facilities: undersea: Dubai Khazzan; pioneer of large systems, (Tech. Paper) JPT Sept., 1065  
 Stratification: *See* Permeability: stratified  
 Stresses: hydrational: shale alteration by water adsorption, (Tech. Paper) JPT Sept., 1141  
 Subsurface: liquid removal: automatic from gas wells, (Forum) JPT Aug., 940  
 safety equipment: selection criteria for offshore completions, (Tech. Paper) JPT July, 793  
 Sunflower helium plant: *See* Kansas  
 Superfrac: rheology of viscous fracturing fluids, (Tech. Paper) JPT June, 711  
 Supply and demand: natural gas, (Forum) JPT Aug., 937  
 Surface: specific: porous media, (Forum) SPEJ Mar., 4  
 Surveying: radioactive tracer: comprehensive report, (Tech. Paper) JPT June, 661  
 Sweep area: *See* Sweep efficiency  
 Sweep efficiency: miscible flood using separator gas and water injection: Ante Creek Beaverhill Lake pool, Canada, (Tech. Paper) JPT Oct., 1232

## T

- Taxation: effects of 1969 Tax Reform Act on petroleum property values, (Tech. Paper) JPT Dec., 1475  
 Telemetry: Elk Basin field: analysis of an operating system, (Tech. Paper) JPT Apr., 397  
 Temperature: circulating mud: calculation of, (Tech. Paper) JPT June, 670  
 effect on: irreducible water saturation and relative permeability; unconsolidated sands, SPEJ June, 171  
 stimulation design, JPT Apr., 493



high: aspects of deep drilling in the Carpathian basin, (Tech. Paper) JPT Feb., 125  
drilling fluids; new technique to determine equivalent viscosity, (Tech. Paper) SPEJ Mar., 33  
theory relating to overpressures, (Tech. Paper) JPT Jan., 11  
profile: steam-soak process; gravity drainage model, SPEJ June, 119  
reference: interpolating or extrapolating drilling fluid viscosities to, (Forum) JPT Oct., 1247  
Temperature logging: profiles in water injection wells; computer study of factors affecting, JPT Nov., 1447  
Tensile strength: casing; maximum load design, (Tech. Paper) JPT July, 805  
Tension: axial: effect on deflection of centralized casing, (Forum) JPT Jan., 7  
Tertiary recovery: miscible slug flooding: current appraisal of field projects, (Tech. Paper) JPT May, 529  
South Ward field, Texas: performance of a propane slug pilot in a watered-out sand, (Tech. Paper) JPT Oct., 1209  
Testing: alcohol flood: NMR technique for analysis of samples, (Forum) SPEJ Mar., 7  
arching and triaxial: stability of sand arches is key to sand control, (Tech. Paper) JPT July, 821  
drilling fluids: new techniques to determine equivalent viscosity under high temperatures and pressures, (Tech. Paper) SPEJ Mar., 33  
fluid loss: from hydraulically induced fractures, JPT July, 882  
geologic materials: use of clamp-on strain transducer, (Tech. Paper) SPEJ Mar., 41  
net vertical permeability: method for determining near a well from in-situ measurements, JPT May, 637  
paraffin deposition: refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17  
production logging, (Tech. Paper) JPT Feb., 207  
solving water injection problems: Huntington Beach offshore field, (Tech. Paper) JPT Sept., 1083  
pulse-test procedure: planning and analysis, JPT May, 618  
reservoir limit: Hurst and Kazemi discuss, (Forum) JPT Aug., 943  
rock properties: proper hydration of clay for determinations, (Tech. Paper) JPT July, 800  
small-anchor: prediction of full-scale holding power, (Tech. Paper) SPEJ June, 127  
wettability of carbonate rocks, (Forum) SPEJ Mar., 3  
Texas: Chocolate Bayou field: Dickey and Fowler comment, (Forum) JPT May, 566  
pressures, hydrocarbon accumulation, and salinities, (Tech. Paper) JPT Apr., 411  
Delaware-Val Verde basin: reserves and economics of deep gas play, (Tech. Paper) JPT Dec., 1515  
Gulf Coast: neutron activation logging for silicon to aluminum ratios, (Tech. Paper) JPT Feb., 201  
N. E. Thompsonville field: theory relating high temperatures and overpressures, (Tech. Paper) JPT Jan., 11  
offshore: bidding patterns, (Tech. Paper) JPT Mar., 283  
theory relating high temperatures and overpressures, (Tech. Paper) JPT Jan., 11  
Panhndle field: performance study of a South Pampa waterflood, (Tech. Paper) JPT Apr., 393  
shale control: with balanced-activity oil-continuous muds, JPT Oct., 1309  
South Ward field: performance of a propane slug pilot in a watered-out sand, (Tech. Paper) JPT Oct., 1209  
Spraberry Driver unit: removal of hydrogen sulfide from waterflood injection water, (Tech. Paper) JPT Aug., 913  
University Block 9 field: case history of a gas-water injection secondary recovery project, (Tech. Paper) JPT Dec., 1485  
Wasson San Andres field: radioactive tracer surveying: comprehensive study, (Tech. Paper) JPT June, 661  
water: the question of quality, (Forum) JPT Dec., 1525  
Thermal recovery of oil: Fry in-situ combustion project: performance of, (Tech. Paper) JPT May, 551  
shale oil recovery by in-situ retorting: pilot study, (Tech. Paper) JPT Dec., 1520  
steam displacement: Kern River field, California, (Tech. Paper) JPT Oct., 1225  
Penn-Grade crude oils, (Tech. Paper) JPT June, 705  
steamflood process: model; two-dimensional, three-phase, SPEJ Dec., 405  
steam-soak: model; depletion-type reservoirs, JPT June, 757  
process; gravity drainage model for, SPEJ June, 119

sustained combustion: effect of water injection in porous medium, SPEJ June, 145  
wet underground combustion: state of the art, JPT May, 605  
Torque: drill collars: using large ones successfully, (Tech. Paper) JPT Aug., 999  
Tracers: radioactive: Fairway field case history, (Tech. Paper) JPT Oct., 1217  
surveying; comprehensive report, (Tech. Paper) JPT June, 661  
Training: computer production control system: planning and implementing, (Tech. Paper) JPT Feb., 134  
Transducer: strain: clamp-on; use on geologic materials, (Tech. Paper) SPEJ Mar., 41  
Transformations: Fourier: simulation of transient gas flow in porous media, SPEJ June, 135  
logarithmic: a decline curve pitfall using least-squares solution, (Forum) JPT Apr., 441  
Transient flow: gas: short cut to stabilized well productivity, (Tech. Paper) JPT May, 537  
transform approach to the simulation in porous media, SPEJ June, 135  
natural gas pipelines: SPEJ Dec., 357  
real gas: analysis of three-rate flow tests, (Tech. Paper) JPT Nov., 1347  
Transmission: lines: natural gas pipeline transients, SPEJ Dec., 357  
Triethylene glycol: predicting capabilities of dehydrators, (Tech. Paper) JPT Aug., 925

## U

Underground combustion: *See also* Thermal recovery of oil  
wet: state of the art, JPT May, 605  
Underground storage: gas reservoirs: model study of foam as a sealant for leaks, (Tech. Paper) SPEJ Mar., 9  
natural gas: foams as blocking agents in porous media, (Tech. Paper) SPEJ Mar., 51  
Underwater: mineral development: legal problems, (Tech. Paper) JPT Mar., 237  
United States: offshore leasing practices: international; comparison of systems, (Tech. Paper) JPT Mar., 247  
University Block 9 field: *See* Texas

## V

Valuation: *See* Evaluation  
Velocity: fluid slug: gas wells; automatic subsurface liquid removal, (Forum) JPT Aug., 940  
Venezuela: East Tia Juana project: wet underground combustion, JPT May, 605  
Vessel: motion control through anchor-line design, (Tech. Paper) JPT June, 685  
Vibrations: longitudinal: oilwell drill string: mathematical analysis of effect of shock sub, (Tech. Paper) SPEJ Dec., 349  
Virden, Manitoba, area: *See* Canada  
Viscosity: drilling fluid: interpolating or extrapolating to reference temperatures, (Forum) JPT Oct., 1247  
equivalent: drilling fluids; new technique to determine under high temperatures and pressures, (Tech. Paper) SPEJ Mar., 33  
Volumetric efficiency: effect of mobility ratio and permeability variation on performance predictions, (Tech. Paper) JPT Oct., 1239

## W

Wasson San Andres field: *See* Texas  
Waste disposal: Colorado: Rocky Mountain Arsenal, (Tech. Paper) JPT Aug., 983  
Water: adsorption: alteration of shale, (Tech. Paper) JPT Sept., 1141  
deep: drilling in 1,300 feet of water in Santa Barbara Channel, California, (Tech. Paper) JPT Jan., 27  
densities: in aquifers: relation to problems in gas storage, (Tech. Paper) JPT Dec., 1492  
injection: effect on sustained combustion in porous medium, SPEJ June, 145  
quality: the question in Texas, (Forum) JPT Dec., 1525  
salt: oilfield produced brines treatment: design and operation of dissolved-gas flotation equipment, (Tech. Paper) JPT Aug., 918

- Water coning: numerical model, SPEJ Dec., 418  
numerical simulation methods, SPEJ Dec., 425  
scaled model study, JPT June, 771
- Water influx: entry into well; location by production logging, (Tech. Paper) JPT Feb., 207
- gas reservoirs: reserve estimates, (Forum) JPT May, 561
- Water injection: *See* Waterflooding
- Water saturation: detection in cased holes: thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365  
high: displacement of oil by solvent, (Tech. Paper) SPEJ Dec., 337  
irreducible: unconsolidated sands; effect of temperature, SPEJ June, 171
- Water treating: hydrogen sulfide removal: waterflood injection water, (Tech. Paper) JPT Aug., 913
- Water wells: injection: computer study of factors affecting temperature profiles, JPT Nov., 1447
- Water-drive reservoirs: gas: reserve estimations, (Forum) JPT May, 561  
recovery efficiency: nomograph for estimating, (Forum) JPT Mar., 277
- Waterflooding: evaluation: East Canton oil field, Ohio, (Tech. Paper) JPT Nov., 1371  
followed by caustic slug injection: Singleton field, (Tech. Paper) JPT Dec., 1569  
hot water pilot performance: Kern River field, California, (Tech. Paper) JPT Oct., 1225
- Huntington Beach field: production logging as used to solve injection problems offshore, (Tech. Paper) JPT Sept., 1083
- injection water: removal of hydrogen sulfide, (Tech. Paper) JPT Aug., 913
- miscible type: mobility control design using micellar solutions, (Tech. Paper) JPT Feb., 141
- polymer results: current appraisal, (Tech. Paper) JPT June, 675
- predicting performance at highest constant injection rate, (Forum) JPT Oct., 1246
- relative permeabilities: effects of core heterogeneities; numerical investigation, SPEJ Dec., 381
- South Pampa: performance study, (Tech. Paper) JPT Apr., 393
- South Ward field, Texas: performance of a propane slug pilot in watered-out sand, (Tech. Paper) JPT Oct., 1209
- Wave action: data analysis: and engineering calculation method, JPT Mar., 368  
Gulf of Mexico, JPT Mar., 347  
forces produced by irregular waves: method for calculating, JPT Mar., 359  
offshore platforms: measured data, JPT Mar., 339
- Waves: semi-submersible drilling vessels: analysis of motions, SPEJ Sept., 311
- Wax: paraffin deposition: refined wax-solvent systems, (Tech. Paper) SPEJ Mar., 17
- Well completion: *See also* specific types  
offshore: recent innovations, (Tech. Paper) JPT Jan., 17  
selection criteria for subsurface safety equipment, (Tech. Paper) JPT July, 793  
servicing by pump-down techniques, (Tech. Paper) JPT Feb., 161
- Well deliverability: determination of acoustic velocities for natural gas, JPT July, 889
- Well imaging: anisotropic reservoirs, JPT Oct., 1317
- Well logging: case histories of production logging, (Tech. Paper) JPT Feb., 207  
Huntington Beach offshore field: production logging used to solve water injection problems, (Tech. Paper) JPT Sept., 1083  
injectivity profiles: interpretation in irregular boreholes, (Tech. Paper) JPT Sept., 1089  
mud: calculation of circulating temperatures, (Tech. Paper) JPT June, 670
- neutron activation: determination of silicon to aluminum ratios, (Tech. Paper) JPT Feb., 201
- nuclear magnetism log: liquids confined in porous solids, SPEJ Sept., 237
- pulsed neutron: contributions to improved formation evaluation, (Tech. Paper) JPT Apr., 424
- radioactive tracer surveying: comprehensive report, (Tech. Paper) JPT June, 661
- sand-shale sequences: systematic approach to analysis, JPT July, 867
- spontaneous potential: double-electrode method, JPT Nov., 1437
- temperature profiles: water injection wells: computer study of factors affecting, JPT Nov., 1447
- thermal neutron decay time log, (Tech. Paper) SPEJ Dec., 365
- Well performance: *See also* Wellbore mechanics  
inflow relationships: damaged wells producing by solution-gas drive, (Forum) JPT Nov., 1399
- Well productivity: stabilized gas: short cut to, (Tech. Paper) JPT May, 537
- Well servicing: pump-down techniques, (Tech. Paper) JPT Feb., 161
- Well stimulation: *See also* Acidizing and Formation fracturing  
design: effect of temperature, JPT Apr., 493  
direct electrical current: enhances water injectivity as well, (Tech. Paper) JPT July, 830  
explosive fracture: gas wells, (Tech. Paper) JPT Apr., 403  
fracturing: new hydraulic process, (Tech. Paper) JPT Jan., 89  
injection of micellar solutions, (Tech. Paper) JPT Dec., 1577  
short-time test data: interpretation in presence of skin effect and wellbore storage, JPT Jan., 97
- Well testing: Rocky Mountain Arsenal, Derby, Colorado: waste disposal and earthquakes, (Tech. Paper) JPT Aug., 983
- Well workovers: *See* Workovers
- Wellbore mechanics: damage: effect on pulse-test response of a two-zone reservoir, SPEJ Sept., 245  
inflow performance: relationships for damaged wells producing by solution-gas drive, (Forum) JPT Nov., 1399
- scale deposition: calcium sulfate: prediction under down-hole conditions, (Tech. Paper) JPT Oct., 1299
- spontaneous potential logging: double-electrode method, JPT Nov., 1437
- storage and skin effect in unsteady liquid flow: analytical treatment, SPEJ Sept., 279  
finite difference treatment, SPEJ Sept., 291
- unstable shales: control with balanced-activity oil-continuous muds, JPT Oct., 1309
- Wettability: change: caustic slug injection in the Singleton field, (Tech. Paper) JPT Dec., 1569  
controlling factor in determining three-phase relative permeability characteristics: sandstone and carbonate, SPEJ Mar., 75
- rock: effect on displacement of oil by solvent at high water saturation, (Tech. Paper) SPEJ Dec., 337
- test for: carbonate rocks, (Forum) SPEJ Mar., 3
- Wilmington field: *See* California
- Workovers: offshore systems: recent innovations, (Tech. Paper) JPT Jan., 17
- Wynona field: *See* Oklahoma
- Wyoming: Big Horn Basin: injection well stimulation with micellar solutions, (Tech. Paper) JPT Dec., 1577  
Big Piney-Labarge field: low-permeability gas well performance at constant pressure, (Tech. Paper) JPT Sept., 1149  
Elk Basin field: analysis of an operating telemetering system, (Tech. Paper) JPT Apr., 397  
Green River oil shale: oil recovery by in-situ retorting: pilot study, (Tech. Paper) JPT Dec., 1520